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PAXTON'S

MAGAZINE OF BOTANY,

AND

REGISTER OF FLOWERING PLANTS.

"Flowers of all hue."

SMITHSONIAN INSTITUTION
FEB 6 1930
SPECIAL COLLECTIONS

VOLUME THE TENTH.

LONDON:
PUBLISHED BY WM. S. ORR & CO., PATERNOSTER ROW.

MDCCCXLIII.

LONDON:
BRADBURY AND EVANS, PRINTERS, WHITEFRIARS.

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TO

HER MAJESTY THE QUEEN.

Madam,

It is by permission, expressly and most graciously accorded to me in person, that I have the great honor of dedicating this Tenth Volume of The Magazine of Botany to Your Majesty. I might have been emboldened to hope, from Your Majesty's habit of general condescension, as well as enlightened interest in a delightful Science, pursued within the happy period of the present reign with increasing intelligence and ardor among all classes of the realm, that the literary portion of my humble labors would have met, even in so exalted a quarter, with no discouragement: but this trust is materially strengthened by the indulgent approval, which, during the recent Royal visit to Chatsworth, appeared to be bestowed upon the practical effects of my own more immediate care and superintendence,—and will be added to the store of bright images which must ever henceforth associate the remembrance of Your Majesty with the Gardens of the Peak.

I have the honor to be,

Madam,

Your Majesty's

Most obedient,

Most loyal Subject and Servant,

JOSEPH PAXTON.

ADVERTISEMENT.

Ten years have now passed since The Magazine of Botany first appeared; various similar works have been relinquished during that period; the field for which it is adapted is covered with publications of a like order, and yet it retains that high standing to which public estimation had long ago elevated it. The Author cannot, therefore, desire a more flattering testimonial that his endeavours are approved.

The character of the Embellishments of this work has at length been brought almost as near to perfection as it is possible to attain. It is, indeed, suggested by some of our friends, that they are occasionally *too* beautiful; and that the plants they represent are not ordinarily so handsome as they are here depicted. Such a view, however, is a mistaken one: it arises from a rule which we adopt in the choice of subjects for our drawings, and which is, to have them prepared, whenever practicable, from specimens that are very favourably grown.

We follow this plan for two reasons:—First, because a well-cultivated state of a plant is the most accurate criterion of its merits; and secondly, on account of the stimulus it gives to those who see our plates, to grow their specimens to the like excellence. So far, then, from being disappointed, when they notice the superiority of any specimen we figure to that which they may produce, they should be rather incited to practise a better system of treatment.

In the letter-press department of this Volume, besides the attention that has been given to scientific matters, some of the commoner operations of the floriculturist have been fixed upon, discussed in their universal bearings, and proved to be singularly influential in facilitating the results of practice. As in questions of higher moment, it will be found that what appear to be little things exert a power over greater, and often involve consequences, which cannot be disregarded with impunity. And since it is these minor circumstances which are generally overlooked, there is assuredly a necessity for having them clearly investigated, and their agency fully explained.

It has also been our aim to supply the cultivator, in most of the articles we publish, with a greater number of hints—not speculative, but practical—for extending the range of his pursuits, and embracing hitherto unattempted, or rarely attempted, objects in culture. Both this and the preceding practice we shall continue and amplify in our succeeding Volumes.

And here, as it is by our friends' kind assistance, and our subscribers' ready patronage, that we have been enabled to accomplish whatever improvements we have already made in our Magazine, and hope to compass others as they may offer, we would again tender our best thanks to all by whom we have been thus encouraged.

CHATSWORTH,
December 20, 1843.

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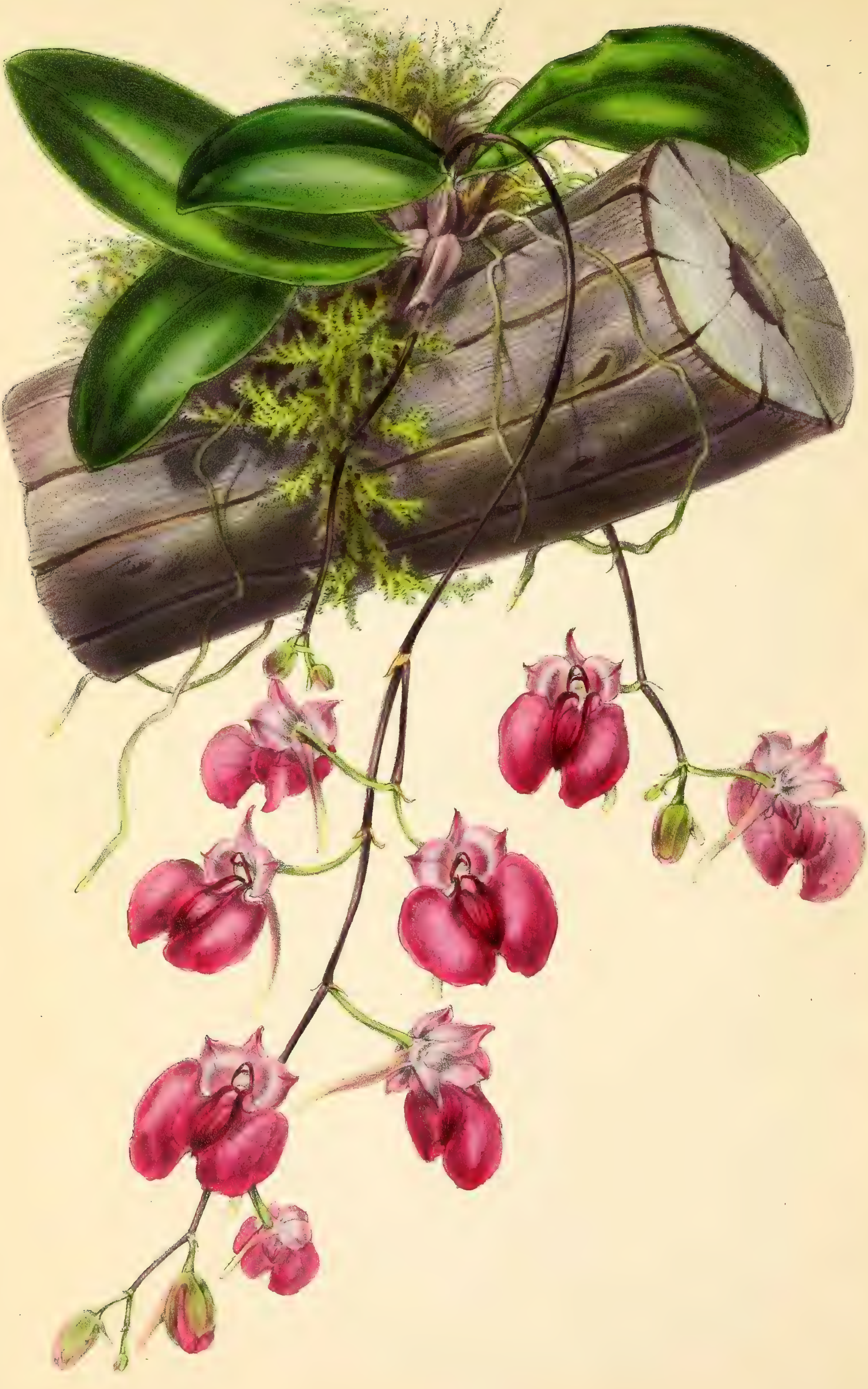

Holden del. & Lith

COMPARETTIA RÒSEA.

(Rose-coloured flowered Comparettia.)

Class.
GYNANDRIA.

Order
MONANDRIA.

Natural Order.
ORCHIDÀCEÆ.

Generic Character.—*Perianth* ringent, the middle sepals and petals dwarf, free, subgaleate; lateral ones connate into one spur. *Labellum* free, obcordate, clawed, spurred at the base; but the spur hidden by the two inner sepals. *Column* free, erect, pointed. *Pollenmasses* two, foveate at the back, with a cuneate, rostrate caudicula.

Specific Character.—*Plant* epiphytal. *Leaves* sessile. *Racemes* pendulous, loose, few-flowered. *Flowers* rose-coloured. *Labellum* furnished with plates, roundish-oblong, with a short subulate spur.

As our drawing represents the whole of this elegant little plant, with the block of wood on which it is growing, the inspector will be able to form a tolerably correct conception of its extreme gracefulness. It is one of those interesting objects which are occasionally met with, especially in the Orchidaceous tribe; and which, while they do not dazzle us with their brilliancy, or powerfully arrest us by their showiness, yet exercise a considerable and pleasurable influence on the mind of the real admirer of nature, on account of their peculiar gracility, delicacy, and loveliness. And it admits of some question whether, in respect to a mind that is very finely strung to a perception of the beautiful, such comparatively small yet charming productions are not more fertile in delight than the most superlative examples of the splendid and the gorgeous.

Without attempting to decide this point, or risking an opinion where argument would be misplaced, we may state that the plant before us is most decidedly worthy of notice and culture as an object of beauty. For although it be diminutive in regard to size, there is a grace in its aspect, and its blossoms are of such a rich rosy tint, that, when in flower, it is a general source of attraction. It blooms, moreover, for a very long time; as we have seen blossoms on Messrs. Loddiges' plant for several of the summer months.

It is a native of the Spanish Main, from whence it was obtained by Messrs. Loddiges of Hackney, with whom it has flowered for the last two years. The leaves are few, and quite sessile, and the racemes of flowers are drooping. They have a very delicate wiry stem, and the pretty rose-coloured blossoms are borne near their extremity.

So scanty and weak are the roots of this and the equally delightful *C. coccinea*, that, unless they are securely fastened to the log that supports them, they are very liable to become detached, fall off, get broken, or have their growth otherwise impeded. It is necessary, therefore, that this circumstance should be particularly attended to. The best way of fixing them is to pass thin wire round them and the block, almost close to the base of their leaves; taking care that this wire does not injure them, by placing a little moss beneath it. The moss will be further beneficial if kept moist in the summer, by encouraging them to develop more and stronger roots; for defectiveness of roots is a principal cause of their remaining stunted and weakly. They should always be grown on logs of wood in preference to being kept in pots; because they are of too slender a nature to be subjected to the chance of decay, which will exist in the latter case.

The genus was named after Andreas Comparetti, a professor at Padua, and an eminent writer on vegetable physiology.

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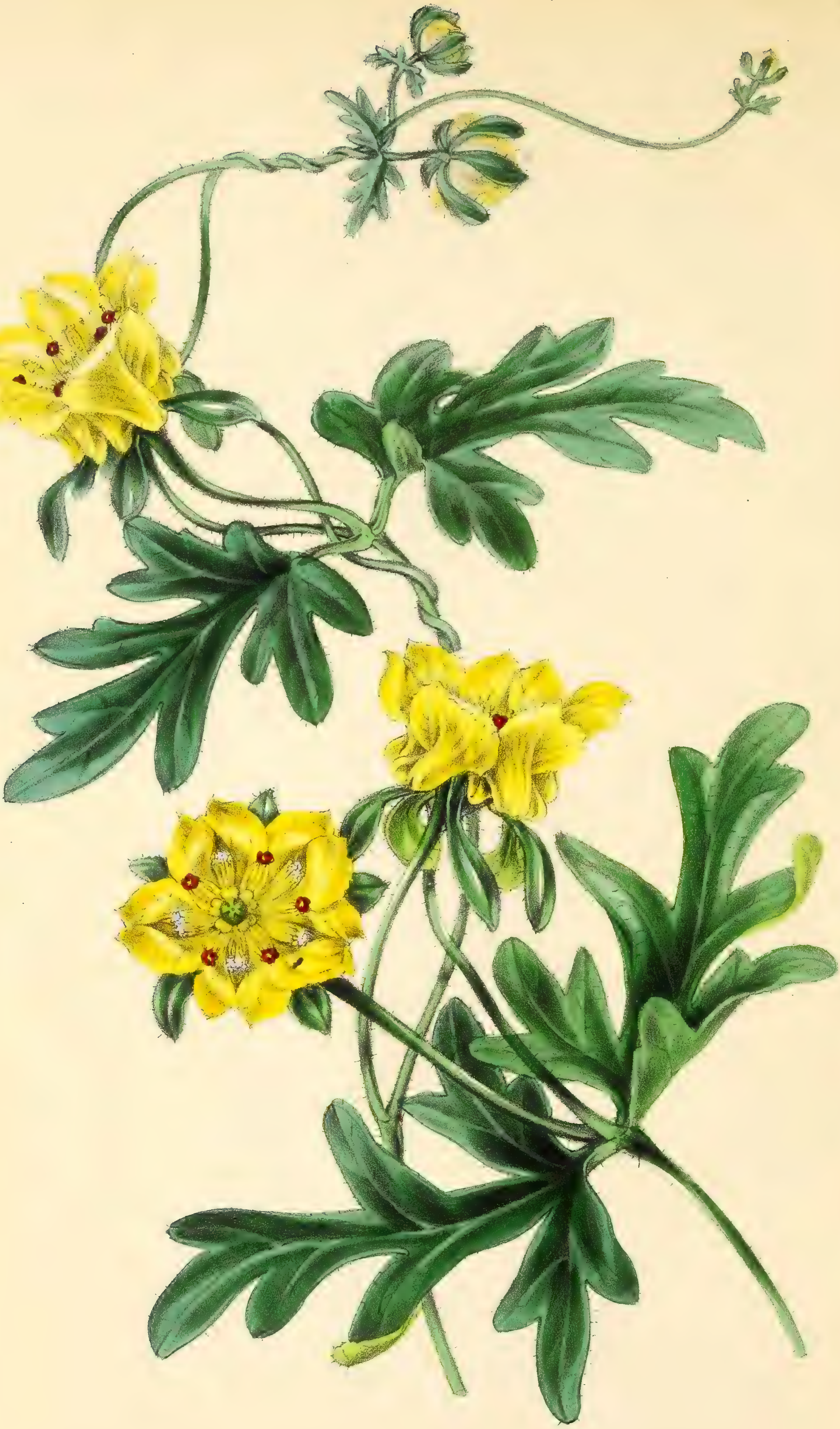


S. Holden. del. & Lith

Scyphanthus elegans.

SCYPHÁNTHUS ÉLEGANS.

(Elegant Scyphanthus.)

Class.
POLYADELPHIA.

Order.
POLYANDRIA.

Natural Order.
LOASÀCEÆ.

Generic Character.—*Calyx* deeply five-parted, permanent, equal. *Petals* five, inserted in the base of the calyx on very short claws, concave, equal. *Scales* inserted with the petals, peltate at the apex, lobed, three-horned. *Stamens* numerous, perigynous; the ten exterior ones destitute of the anthers; and these are placed by twos opposite the scales, and are longer than the rest, which are disposed in five fascicles opposite the petals; anthers two-celled, erect. *Ovarium* prismatic, siliquiform, crowned by the tube of the calyx, three-valved at the apex. *Seeds* oval, wrinkled.—*Don's Gard. and Botany.*

Specific Character.—*Plant* a twining annual. *Stems* dichotomous. *Branches* beset with retrograde hairs. *Leaves* opposite, pinnatifid; upper ones bipinnatifid, hispid: segments obtuse, ciliated. *Flowers* sessile, erect, solitary, yellow.

Synonymes.—*Loasa volubilis, Gramatocarpus volubilis.*

The plant now depicted was, it seems, introduced to England from Chili in the year 1824; and, from inattention to the preservation of its seed, or from other causes, was soon afterwards lost to this country. Among some recent importations, however, from the same quarter, it has again made its appearance; and is so very ornamental that we wish to bring it at once into favour by inserting a figure, and explaining its merits.

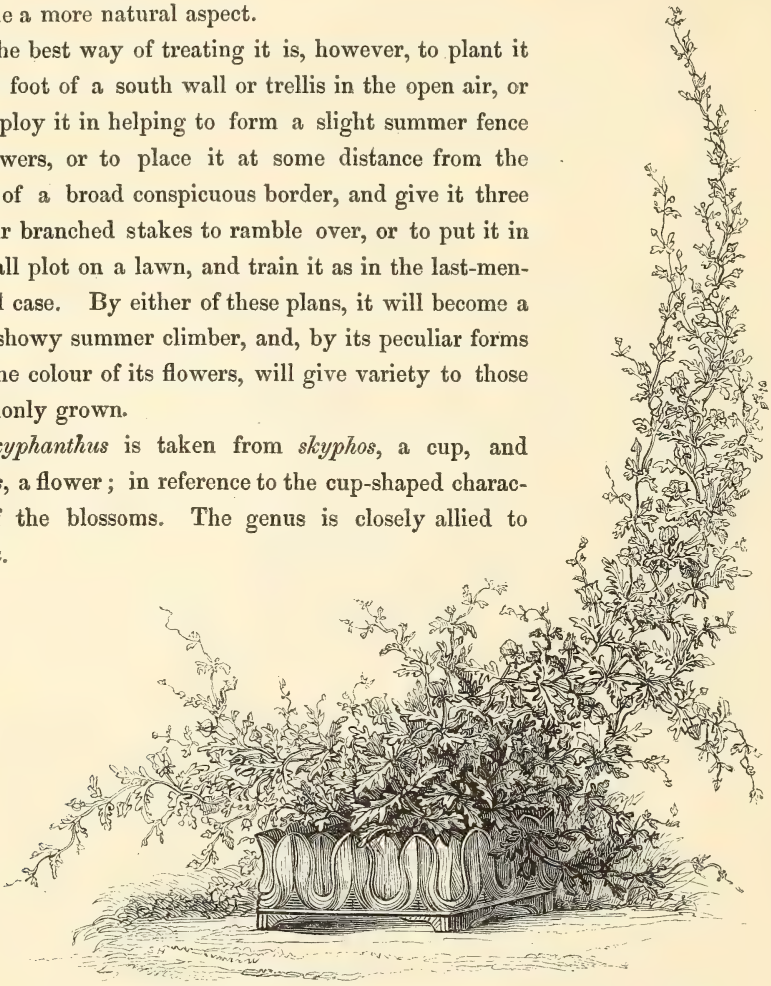
It flowered at the same time, last summer, with Mr. Green, gardener to Sir E. Antrobus, Bart., Cheam, and with Mr. Low, of the Clapton Nursery. At the former place, it was planted against a south wall, over which it extended its branches seven or eight feet, and constituted an exceedingly pleasing summer covering. At Mr. Low's, it was grown in pots; but while some of the plants were kept in a greenhouse, others were placed in the open air, and both classes flowered with the greatest profusion from the beginning of August to the middle of October. The stems are of an elegantly twining character, the leaves ample and agreeably pinnatifid, and the flowers large, copious, and of a very lively yellow tint.

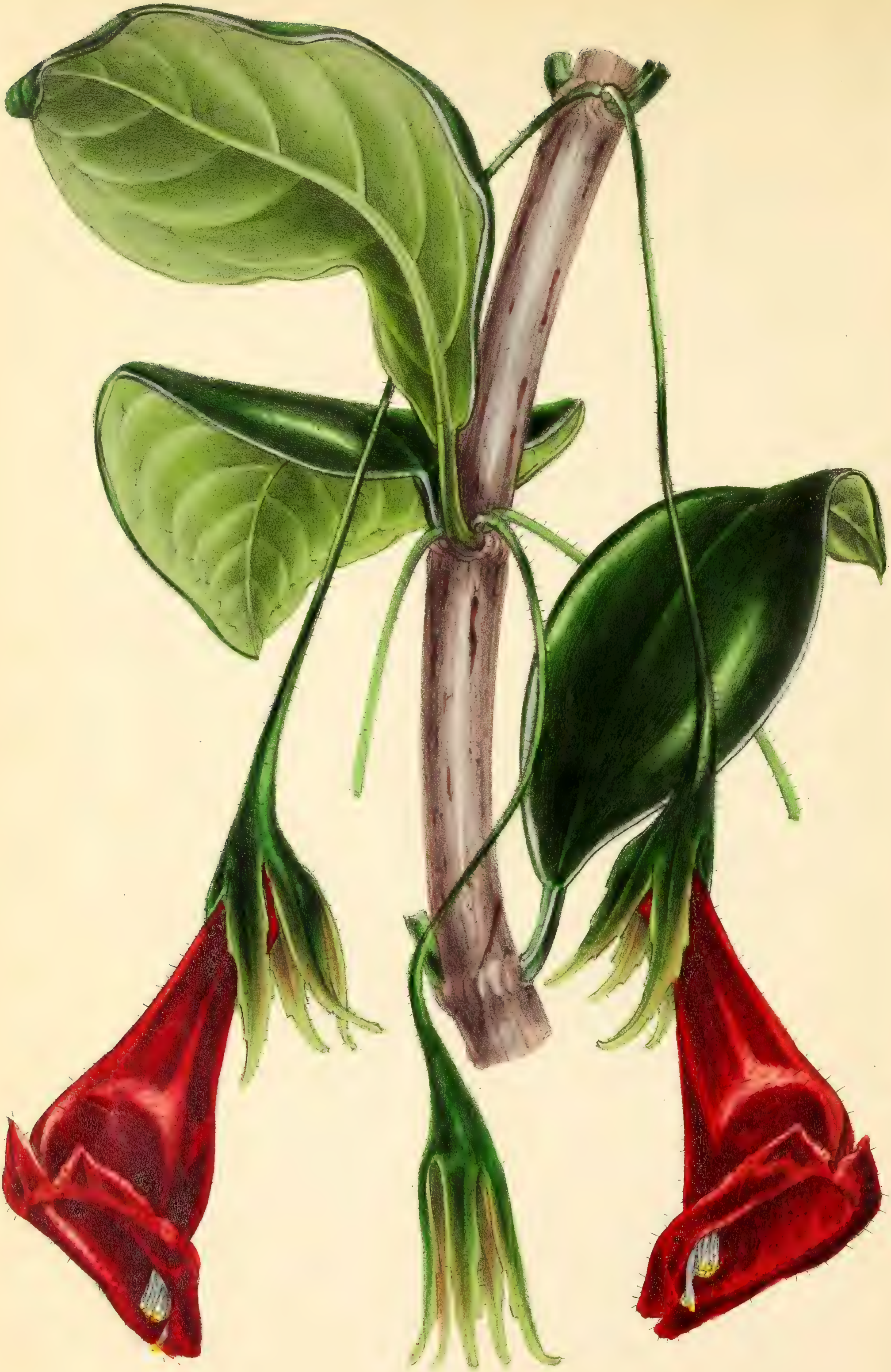
It is described in the catalogues as an annual, and will, most probably, answer entirely to that description. It is also stated to be thoroughly hardy; but as we cannot vouch for this, it will be better to raise it in frames, along with the common tender annuals, till an opportunity of testing its complete hardihood is afforded.

Kept in a greenhouse, it will make a very excellent addition to the somewhat limited supply of flowering plants in August and September; and should be placed in the airiest as well as lightest situation. The branches should be trained spirally round about six slender stakes, put at equal distances round the pot, and from three to four feet in height. When they reach the summit of these, they should be left to hang down of themselves, as they will thus assume a more natural aspect.

The best way of treating it is, however, to plant it at the foot of a south wall or trellis in the open air, or to employ it in helping to form a slight summer fence of flowers, or to place it at some distance from the front of a broad conspicuous border, and give it three or four branched stakes to ramble over, or to put it in a small plot on a lawn, and train it as in the last-mentioned case. By either of these plans, it will become a very showy summer climber, and, by its peculiar forms and the colour of its flowers, will give variety to those commonly grown.

Scyphanthus is taken from *skyphos*, a cup, and *anthos*, a flower; in reference to the cup-shaped character of the blossoms. The genus is closely allied to *Loasa.*





S.Holden. del & Lith

Columnea splendens.

COLÚMNEA SPLÉNDENS.

(Splendid-flowered Columnea.)

Class.
DIDYNAMIA.

Order.
ANGIOSPERMIA.

Natural Order.
GESNERACEÆ.

Generic Character. — *Calyx* inferior, five-parted. *Corolla* tubular, straightish, gibbose behind at the base, ringent; upper lip erect, arched; lower one trifid, spreading. *Stamens* four, didynamous; anthers connected with the rudiment of a fifth behind. *Glands* one to five around the ovarium. *Berry* one-celled; placentas two, parietal, two-lobed. *Seeds* oblong.—*Don's Gard. and Botany.*

Specific Character. — *Plant* an evergreen shrub, climbing or trailing, growing two feet or more in height. *Branches* covered with pale, whitish-brown, smooth bark at the bottom, deep green towards the top. *Leaves* opposite, shortly-stalked, ovate-oblong, acuminate, thick, fleshy, bright green, shining. *Flowers* axillary, mostly solitary, pendent. *Peduncles* four inches long, slender, hairy. *Calyx* with long, lanceolate, hairy segments. *Corolla* very large, bright scarlet, a little spotted inside with a darker hue.

Synonymes. — *Columnea grandiflora, Nematanthus Guilleminiana.*

This extremely handsome plant appears to have been collected at Brazil, and sent to the Continent of Europe, where it is known by the name of *Nematanthus Guilleminiana*, and from whence it was received by Messrs. Rollisson, of Tooting, with whom it flowered last autumn, when the accompanying plate was prepared. In England, it passes under the title of both *Columnea grandiflora* and *C. splendens*, each of which is appropriate; but we have selected the latter because it is more commonly used, and also because the general appearance of the flowering specimens, and the peculiar richness of the individual blossoms, seem to demand such a distinctive epithet.

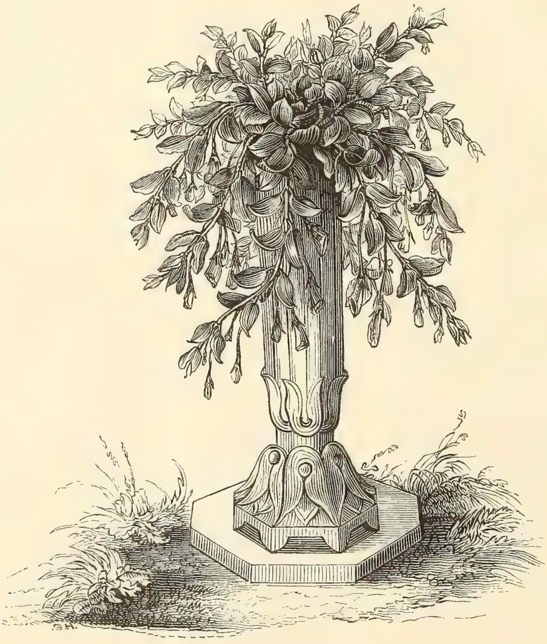
When better known, and more largely cultivated, it will unquestionably prove one of the most showy stove plants we possess. Growing two feet or more in height, it may be treated as a sort of low climbing shrub; and it is in this way that Messrs. Rollisson have hitherto managed it. The nature of the species is, nevertheless, evidently to become pendent, and hence it will, like *C. Schiediana*, be an admirable sort for suspending, or for elevating on a pedestal of any kind. All the lower part of the branches is covered with a nearly white smooth bark; and this, in contrast with the very intense green of the younger and upper portions, has a good effect. The foliage is thick and fleshy, something like that of *Hoya carnosa*, but more elegant in figure, and of a particularly lively verdure. It is not so distant as that of *C. Schiediana*, and the blossoms are produced from its axils.

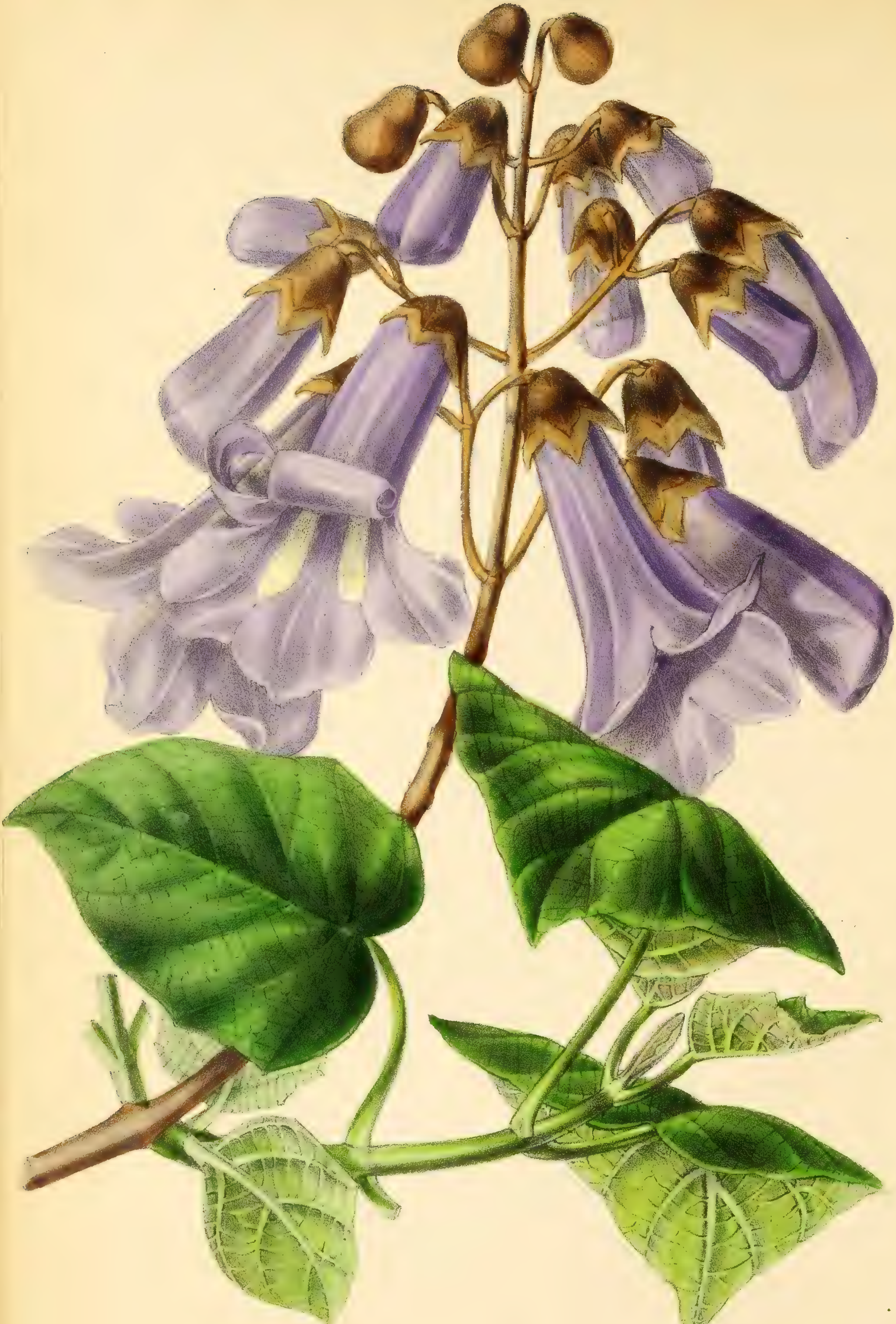
One, and sometimes two or three flowers accompany each leaf, and they depend on exceedingly long peduncles. The number, duration, and frequent succession of these flowers, are quite remarkable. Their colour is a superb deep scarlet, and they are spotted on the inside of the limb with dark, blood-coloured spots.

The species began to show flower at Messrs. Rollisson's in the month of November last. It developed a few blossoms, and then the buds appeared to remain stationary till the present time. They are now expanding rapidly; and the specimen promises to remain in bloom for many months.

The following wood-cut will give an idea of how the plant ought to be grown; but it is fully as suitable for hanging up to the roof as for standing thus. It should be potted in a mixture of very turfy loam, not too much reduced, and well-decayed open leaf-mould. Turfy heath-soil and moss, freely incorporated, would likewise probably be appropriate. It must be kept in a warm stove, and possibly, if retained in a somewhat shaded Orchidaceous house, would be as much an epiphyte as *Æschynanthus*, the larger species of which it slightly resembles. As the branches root, almost spontaneously, around every leaf, it can be propagated with the greatest ease by cuttings, and might also, doubtless, be increased by leaves.

It is difficult to say what will be its usual flowering period. The probability is that it will blossom, occasionally, throughout the whole year.





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Paulownia Imperialis.

PAULÒWNIA IMPERIÀLIS.

(Imperial Paulownia)

Class.
DIDYNAMIA.

Order.
ANGIOSPERMIA.

Natural Order.
SCROPHULARIÀCEÆ.

Generic Character.—*Calyx* campanulate, five-cleft. *Corolla* tubularly campanulate, with a five-cleft, sub-bilabiate limb. Stamens four, didynamous. *Stigma* truncate. Capsule woody, two-celled, two-valved. *Valves* septicidal. *Seeds* numerous, each surrounded by a wing, attached to a fixed placenta on the back of the dissepiment. *Albumen* fleshy.

Specific Character.—*Plant* a deciduous tree. *Leaves* ovate, cordate at the base, acute, undivided or three-lobed, densely clothed with soft hairs beneath. *Flowers* panicled. *Calyx* covered with rusty tomentum. *Corolla* having different shades of purplish lilac.

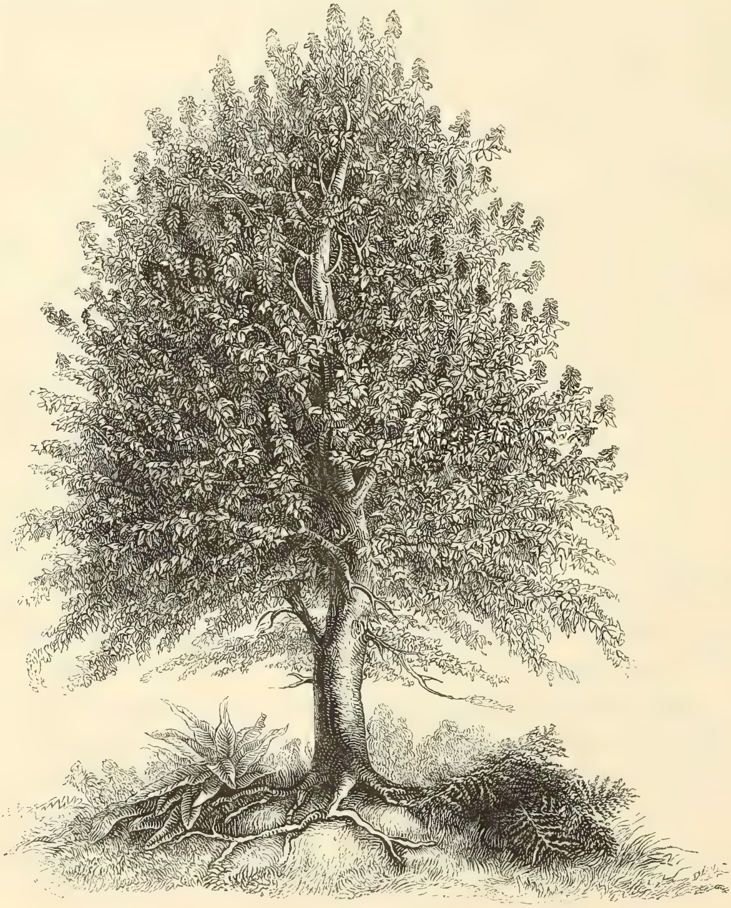
A considerable quantity of this noble tree has lately been introduced to Britain from France and elsewhere; and the circulated accounts, with the likelihood of its proving hardy, have excited so much attention, that we are induced to publish a drawing of it, which was made for us last year in the Garden of Plants at Paris, even though the species has not yet flowered in our own country. In deviating thus from our usual practice, we think we shall have more thoroughly carried out the wishes of our subscribers than by adhering steadfastly to the rule of figuring only what has bloomed in England; because, the notoriety of our present subject is such, and there are so many living plants of it in our nurseries and gardens, that an opportunity of judging of its blossoms cannot be otherwise than acceptable.

It is one of the finest of Dr. Siebold's many introductions from Japan, where it grows to the height of thirty or forty feet, with a trunk from two to three feet in diameter. The habit of the tree is shown in the woodcut on the following page. Its leaves are excessively large and handsome, and the flowers are very like those of *Catalpa syringæfolia* in shape, besides being borne in similar panicles from the extremities of the branches.

When first received at Paris, it was nurtured with great tenderness, and even placed in a greenhouse; but after being put in the open ground, it grew much more vigorously, and, though protected for a year or two, was ultimately found to need no artificial shelter. Whether it will succeed as well in England, without covering, is yet rather doubtful. Still, as it will most likely do so in the warmer districts, and as it will certainly get hardier after it has been exposed and inured to our climate for a few years, it may finally become as valuable an acquisition to our pleasure-grounds as the Catalpa.

In planting it out here, it should be placed in a dry and somewhat open position, and a prepared loamy soil, the latter being shallow and well-drained. Perhaps it will be advisable to cover it partially for the first two or three years, especially if the autumn should have been unfavourable to the ripening of its wood; and it may afterwards be left quite unsheltered. In covering it at all, however, provision should be made for giving it a great deal of air, and, indeed, for opening it altogether on those days when no danger from cold exists. Above all things, the roots should be kept as dry as practicable in winter, that the plant may not begin growing too early in the spring. Its propagation may be carried on by cuttings.

The Chinese call it Too or Hak-too, and the Japanese Kiri. It is named *Paulownia* by Dr. Siebold, in honour of the hereditary Princess of the Netherlands, who was one of the daughters of the Emperor of Russia.



GARDENING AS A SCIENCE.

No. I.—LIGHT.

We are not disposed to enter upon this mysterious agent as in any degree connected with the science of optics: or at least we shall merely observe that, as the sun's rays—the fountain of light—in passing through the glazed roofs of stoves or greenhouses, must be opposed, or refracted, that is, bent in proportion to the varying slopes of the sashes, it will be apparent to an acute, reflecting observer, that the angle of a glazed roof must influence, in a very considerable degree, the power of light within the erection. Thus, if any one hold a pane of glass erect in his hand, and view through it a luminous object on a right line, exactly opposite to the eye, he will perceive that object clear and well-defined. On the other hand, if he incline the pane to angles of different degrees, the object will be distorted or lost, till at length it will be evident, that as the edges of the pane are brought into the direction of the eye and the object, no ray of light, however intense, can pass at all.

Thus, to arrive at a practical elucidation of the theory of passing light: that slope of a roof, which coincides with, and is perpendicular to the sun, at any period of the year, admits the greatest volume of direct (unrefracted) light, at that period; therefore, as a medium, an angle of 45 degrees, i. e. amounting to the eighth part of a circle, may be considered as the most applicable to the general purposes of plant culture. If fruit be the object, the principle admits of much modification.

Hereupon it will be relevant to cite the opinion of the late Mr. Knight, one of the staunchest advocates of the agency of the solar ray upon vegetable organization. Viewing the perfect maturation of the fruit, and intensity of flavour, as points of the greatest consequence, he endeavoured to give a slope to the different forcing-houses, which should be at a right angle with the sun's rays, *at the season when the fruit was expected to ripen.* Thus, in a private letter on the cultivation of the Persian melons, he observed that "the quantity of fruit must be regulated by the extent of foliage presented to the light. One fruit, of 4 lbs. in weight, may be allowed to every four square feet of glass." The slope of Mr. Knight's Persian melon house was very trifling, or about 23 degrees, calculating from the ground horizontal line, as the base; an angle which corresponds pretty nearly with the altitude of the sun at midsummer. Now, the melon plant is trained upon a trellis under the sashes, a few inches below the glass, thus exposing the upper surface of the leaves to the full glare of the sun.

Geraniums prosper in a blaze of light, provided they be freely supplied with fresh air and water during the growing season; but that season occurs early in the spring; therefore a slope, of 40 degrees from the ground line, (which is equivalent to 50 degrees, assuming the perpendicular back wall, as a base,) is very suitable to them, and to other plants with juicy, semi-succulent stems.

Camellias, on the contrary, and vast numbers of the hard-wooded species, affect a shady situation; in which the rich verdure of their foliage is better sustained. It may therefore be laid down as an axiom established by facts, that they who endeavour to attain perfection of growth in a miscellaneous collection of plants, whose habits are dissimilar, must compound for disappointment. We talk of climate, country, and natural habits, and propose to study them as tutors. The curious in botanical and physiological research do well to indulge in these inquiries; but they are not essential to the practical English gardener. To him experience and observation of results will afford the surest guides on which to found a theory; for, as every imported exotic is at once placed in a situation, which in no respect corresponds with that from which it was removed, its future prosperity must depend upon artificial appliances. Temperature is a secondary consideration; since it has been proved that the variable nature of the British climate destroys many plants which sustain without injury the rigours of a Siberian winter. But *light* and its modifications are essential: for not a ray passes through the medium of the most transparent crown-glass, that does not suffer some degree of what is called decomposition. Every ray also is more or less bent, and its heating and illuminating powers reduced, as may be proved by the following very simple experiment. If a spare light be rested against a south garden wall, so that it form a sharp slope, and two correct thermometers be suspended against the wall, one under the centre of the light, and the other exterior of it, the latter at mid-day, exposed to the utmost fervour of the sun, will indicate a heat much greater than the one under the glass, to the extent sometimes of 10 to 12 degrees. We learn more than one truth by this investigation. Glass interrupts the power of the sun; the air, in either situation, having little to do in regulating temperature. The comparative differences vary extremely in their degrees, proving that the power of the solar ray is not dependent upon greater or less brilliancy; and again, the glass, though it defend the plants, decidedly abates temperature; and, therefore, they reason erroneously who ascribe the heat of forcing-houses, and the maturation of plants, to the heating medium of the glass. Glass abounds with globules, which act as so many lenses, and produce burning points; it also diffuses a moderated illumination; but the main advantages are derived from its retention of an equable temperature, and the opportunity afforded to govern the due admission of external air. And these considerations instruct us to study the availability of air by the sliding sashes. We drop this hint in order to induce reflection, but to pursue the inquiry now would be remote from our present subject.

Light, in its nature, cannot be understood or defined; it assuredly is an emanation from the sun; but this is a bald truism: that it induces stupendous, electro-magnetic phenomena, by acting on and under the surface of the earth, is equally certain; and thus, by an induced voltaic action upon water and metallic substances, heat, magnetism, and meteorological electricity are developed. We may safely insist upon these general deductions while deprecating a dogmatic opinion; especially as the recent discoveries have shown in what tremendous volume electricity is combined with the elements of matter.

If, then, solar power operate such grand phenomena, should we err in an endeavour to trace to the same causes all the developments of vegetable structure?

Some have positively asserted that certain plants coruscate, or emit flashes of light. Not having witnessed any of the circumstances which are recorded in Dr. Darwin's *Botanic Garden*, their accuracy cannot be vouched; but it would be interesting to investigate the following statement, given on the authority of a Mr. J. R. Trimmer, who refers the flashings to electricity. He says:—"In walking in my garden in the evening, in which was a considerable quantity of the Nasturtium, in bloom, not at all thinking of the flashing of plants, I was struck by the very vivid flashes that proceeded from them: the scintillations were the most brilliant that I had ever observed, and at the same time the sky was overcast with a thunder-cloud; directed by this circumstance, I have, on several occasions, looked for the flashes when in the evening there have appeared electric clouds collecting, and have always found them at that time most to abound and to be most brilliant."

There is nothing to startle in these assertions; for though few may have observed flashes of fire, none can doubt the powerful attractive influence of solar light; witness the expansion of the flowers of all the *Mesembryanthemums* under the direct ray, and the surprising movements of the leaves of most *Papilionaceæ*.

The foliage of growing Erythrinæ, when quiescent, is nearly level in position; but no sooner does it feel the power of the sun than its leaflets begin to rise, till at length, during the blaze of day, they become almost perpendicular, and appear as if they struggled to rush aloft. Gradually, as the day declines, they relax, and at midnight assume an exactly opposite direction, pointing to the earth: these changes exist no longer when the plant, though clothed with leaves, has ceased to grow.

All nature is replete with light: the two gases, oxygen and hydrogen, are perfectly invisible; but when mixed and ignited, they explode violently with a great flash of light, or consume slowly in a stream of fire, according to the precautions employed, producing an intensity of light and heat, which surpasses ordinary conception. Every act of friction or percussion yields evidence of concealed fire, and so does each familiar instance of combustion.

The opposite of light, or its modification, which we call *shade*, is worthy of much study. By *shading*, or by placing plants impatient of sun in a north aspect, the gardener preserves in blooming health his camellias, azaleas, and Ericaceæ. Shade, by means of a semi-transparent screen, promotes the diffusion and softening of the ray, and thus wards off much danger of scalding, without weakening its influence. But as the beams are the agents of colour, especially during the maturation of fruit, it is philosophical to presume, that, coincident with the admission of much air, their utmost power is essentially required to perfect the last important process of vegetable existence.

NEW METHOD OF POTTING PLANTS.

In a day when numbers of gardening practices are undergoing such a scrutinizing investigation, and the rays of science are so shed around them as often to render considerable modification necessary in their processes, it seems scarcely surprising that even a radical change should be effected in many operations. So completely is horticulture—and, we may add, science generally—in its early childhood at present, and so little has been absolutely settled respecting its practical application, that it would be a sign of inertness, rather than of superiority to past ages, were not some new truth, bearing upon refined culture, almost continually being evolved.

There is that in the human mind, in reference to all circumstances and to every subject, which must be perpetually impelling it forward. And to be quiescent in anything, is not merely to stagnate, but to retrograde. Hence, we hail with a satisfaction which derives a depth proportioned to the energy of its cause, and to contrast with the prejudicial consequences of inaction, every kind of onward movement; for even failure in any particular track is valuable to the observer, by teaching him the futility of expanding his faculties again in that quarter.

But there is notoriously a tendency in most minds, except those who are so happy as to hit upon novel and ingenious expedients, to treat with a most calculating suspicion all innovations on existing systems, particularly when the benefits of such innovations are not clearly obvious. Few persons of experience have passed through life without, at some time or other, being deceived and cheated by extravagant announcements; thus acquiring a caution which, like their former heedlessness, is frequently carried to an extreme. Nothing is more easy than to denounce an unusual course, by suggesting the improbability of its success. A child might have placed a bar in the wheels of a locomotive, and thus, for a time, impeded its progress. And so, mere children in experience and understanding may cast doubts upon any minor discovery or application of science, thereby retarding its diffusion. Such a practice is, however, most unphilosophical and unwise. And while every one ought to hesitate ere they adopt measures materially different from those they have before followed, the most rational plan, instead of throwing questions or ridicule around them, is to examine their actual results, and personally test their value by limited experiment. We have considered this prelude essential to the dissertation we are about to give, because the statements we shall have to bring forward appear altogether to militate against the strong and increasing array of public opinion. But if a consideration of popular prejudices prevents us from attaching too great advantages to the system we are to describe, it must not deter us from discussing it, or from giving utterance to what we know to be facts. That is by no means necessarily absurd which contravenes prevailing notions. On the contrary, the most important truths have generally, at the period of their elicitation, been opposed to current convictions, and common belief.

In the first ages of floriculture, and those which, we may observe, have extended down very nearly to modern times, little attention was bestowed on the operation of potting plants. Once a year, they were all shifted, and perhaps repotted again, during the summer. This was done, however, because it was absolutely necessary, and not with the view of thereby bringing the plant to its greatest perfection ; for very commonly, in such cases, the specimen was removed to a much larger pot than that in which it was growing, and when it did not happen to be in a peculiarly vigorous state, so large a shift invariably injured it, by causing an accumulation of water in the superfluous soil.

More recent practitioners, perceiving that the potting of plants affected their health and beauty to an immense extent, have entirely departed from the old method. By a careful and well-informed culturist, no specimen is potted till it really needs shifting ; and then it is transferred to a pot only one size larger, to be further removed, in a similar way, whenever its roots reach the outside of the soil. Thus, the potting of choice plants has come to be regarded as a thing to be continually going forward : frequent and small shifts have been looked to as the standard of good culture ; and certainly the results of such a course have been in every respect gratifying.

Admitting, as we do, that the mode just spoken of is mightily in advance of the old plan, that it produces the happiest consequences, and that the one of which we have to write is the direct reverse of it in its main principle, we cannot but state in what respects the now popular method is useful, and in what deficient.

Plants in pots, it must ever be recollected, are in entirely different conditions from those which are growing in the open border. With their roots closely surrounded by an artificial wall or boundary, the very existence of which, and the manner in which it is drained, must have a great influence on all their functions, it is indispensable that they be treated somewhat artificially. To place a small plant in a large pot, by the ordinary means, and with the ordinary drainage, would be, as every one knows, either to ensure its death, or to render such an occurrence something more than probable. And if it stagger the inexperienced inquirer to learn that the same specimen would flourish most luxuriantly if at once planted in a border which had, comparatively to the largest pot, no limits whatever ; he may check his astonishment when he is told that it is the confinement of the pot, and not the amount of unoccupied soil it contains, that occasions the alleged detriment. Soil in a pot has, from watering, from the impossibility of air passing freely through it, and from the almost unavoidable imperfection of its drainage, a powerful tendency to become too much consolidated, and therefore too retentive of moisture.

To counteract this tendency, the slight shiftings, often effected, which we have above alluded to as now being so general, have been resorted to. Most cultivators are aware that if the roots of plants penetrate the soil while it is in a porous and favourable condition, they will, by mechanical means, keep it so. And by giving specimens only a small quantity of fresh earth at a time, as in the scanty shiftings we are referring to, those circumstances are ever maintained; for before the new soil has time to acquire the closeness which is so undesirable, it becomes filled with roots, and provision is thus made for retaining it always porous. Here, then, is one, and, as we conceive, the chief reason for the utility of numerous and trifling pottings.

Some cultivators will be disposed to ascribe a benefit to the proximity of the roots to the side of the pot; as these are believed to be more abundant and healthy in such positions. It is an acknowledged fact that cuttings root sooner and more securely when in the neighbourhood of the pot's edge, than when situated in the middle of that pot. It is, moreover, we believe, indisputable that roots grow faster as they near the outside of a pot, than when they have a large mass of inefficiently drained earth to shoot into. And the way in which this is occasioned is not through the attraction which the pot has for the roots, or the love which they possess for creeping towards and over hard substances. Such a proposition would be preposterous. It is owing to their tendency towards any vacuum, in consequence of the greater porosity of the soil in its vicinage; and they increase with enlarged rapidity when they come in contact with the side of a pot, or have reached the boundary of their soil, because they have then no obstacle to oppose their progress, and they can run on, and on, without any obstruction; whereas, while in the earth, this substance itself must necessarily check their extension.

The case of cuttings, then, striking root sooner when near to the edge of a pot, and of roots making additional progress when lying close to the outside of a pot, prove only that the earth is additionally porous in those positions, and that it is less compact, and less sodden, than in the centre of the pot. And while it supplies another reason for the advantages of small shiftings, it furnishes us with a principle which we shall hereafter have to make use of; viz., that openness and porosity in the soil is the grand thing that is necessary to promote the free growth of the roots of plants. We might prove, if it were needful, that the pot itself has nothing to do with the more rapid development of roots, by a reference to the fact that border specimens increase faster than the most carefully tended potted ones. But all will concede this, and we shall not urge it.

A further advantage consequent on gradual and frequent removal, is that it keeps the specimens more immediately beneath the culturist's observation, enabling him, at pleasure, to examine their state, and determine whether they are progressing satisfactorily or in any way ailing. By simply turning out the ball of soil, without breaking or disturbing it, the roots will always indicate whether or not the plant is in health, and likewise suggest the remedies in case of sickliness. It may be taken as an almost unvarying rule, that the diseases and displeasing aspect of plants arise from the state of the soil in which they are planted, when there is no palpable cause for them in the atmosphere, or in external accident.

Several defects, however, belong to the foregoing method of potting. It involves a considerable sacrifice of time; and if, in the consciousness that its benefits so far exceeded this or any like evil, to warrant the disregard of the latter, we have urgently, on former occasions, recommended its adoption; we never left it to be inferred, that a plan entailing all or more than its advantages, and, simultaneously, avoiding its objectionable features, was not infinitely to be preferred. The labour expended in so frequently potting plants is, we are persuaded, by no means trifling or of small moment. It is, notwithstanding, overbalanced by its good effects on the plants; since no trouble can be accounted too great that is essential to secure the given object. Still, if that trouble could be dispensed with, and the same or a better purpose alike be secured, there could be no hesitation in declaring the system that accomplished this the superior one.

Again, by often being shifted, plants inevitably receive a check, which, as we assert, is in some degree inimical. To repot a specimen ere its roots appeared on the outside of the soil, would be extremely imprudent, as it would carry back the system to the old one of shifting into large pots at once, and entail most of its disadvantages. To pot it, on the other hand, as is always done, when the roots are copiously manifest on the exterior of the earth, is sure to cause the injury or crushing of some of the most tender and valuable roots. And as it most usually happens that the roots have begun to creep over the side surface of the soil before the specimen is repotted, there must some time elapse while they are recovering the right direction, and they will further be weakened by having passed beyond the general ball of soil. Two or three days, therefore, must be lost by the effort of the plant to recover its tendencies, and to lay hold of the fresh earth; and then there will be the enfeeblement which has resulted from the broken, or wrongly-directed, or attenuated roots.

We presume there are those who would argue that such impediments would rather benefit than injure flowering plants, by drawing out their latent dispositions to bloom. And this view may seem to be justified by the commonly believed circumstance that plants which are confined at the roots blossom soonest. A mistake, however, exists here. It is not a counteraction of the lateral, but of the downward extension of roots, that affects the production of inflorescence. And we have seen it demonstrated, that a plant which is not growing in too deep a soil, will bloom far sooner and more finely when its roots have no obstruction to their horizontal progress, than when they were repeatedly changed into new pots as soon as their roots gained the sides of the existing ones. Denying, therefore, that such checks are otherwise than prejudicial, we must give a warmer support to any plan by which they could be obviated, while the other advantages of the system were preserved.

A third objection to such oft-repeated pottings is, that by the use of various soils, and by the frequent manual operations, the texture of the mass of earth will differ considerably, and thus it will arise that the water applied will not spread itself equally through the whole ball, and that the inner roots will be less able to exert or elongate themselves. At every new potting, the central and original mass will assuredly be pressed closer, and made more solid; and this process will as certainly be productive of harm. However it may be thought that the inner and main roots do not contribute to the nourishment of a plant, and that it is solely from the outer and fibrous roots that nutriment is obtained, it will be found, on examination, that there are lateral as well as terminal fibrous roots, and that those which grow at the sides of the stronger ones and almost around the stem of the plant, perform, or ought to perform, as many vital functions as those which are situated at the extremities. Hence, the mode of potting which provides for the uniform texture of the soil, and relieves it from any manual pressure beyond what is at first requisite to settle it in its place, must, if it ensure, in other particulars, the good results of that mode to which we are objecting, be decidedly and unhesitatingly substituted for it.

To attain all these points, and realise additional benefits to which we cannot now advert, we shall have, next month, to detail a system which has been practised, with astonishing success, in one or two metropolitan collections, and of which we ourselves have had an opportunity of witnessing the operation.

ON GROWING IVY IN PLEASURE-GROUNDS AND UPON LAWNS.

THE uses of ivy, as an ornamental plant, are generally confined to concealing old or boundary walls, mantling houses, rustic erections, or ruins, decorating the trunks of trees, or carpeting the ground in shrubberies and plantations. For all these purposes, it is singularly appropriate; though there are two of them, at least, for which we think it is insufficiently employed. We refer to its being planted so as to cover, or partially cover, rustic summer-houses, arbours, &c., in wild or picturesque parts of the pleasure-grounds; and to its forming an undergrowth in ornamental plantings.

Perhaps no plant accords better with the picturesque in building or landscape than the Ivy. If suffered to grow irregularly, it casts over any erection an air of naturalness and rusticity which is precisely what is wanted in the wilder portions of a garden. Indeed, it seems to give to any small and rude structure the appearance of a natural alcove, and thus contributes much to the enjoyment of those who use it, because, as it will be required mostly in the summer, the object then is to gain a leafy shelter and shade, and not the counterpart of one of the domestic apartments. Or if it be frequented even in the warmer days of winter, the verdure of Ivy leaves cannot fail to be grateful and refreshing.

Besides, unless some thoroughly architectural erection be intended, one great point in building small summer-houses should be to make them harmonize, and even blend, as much as possible, with the scenery. It is the crying fault of such things that an attempt is made to render them conspicuous in themselves, by the most fanciful and sometimes ridiculous decoration, instead of constructing them so as to answer the primary end, without obtruding them, as it were, on the observer's notice. A small bower, rendered neat and comfortable within, and kept dry by being effectively thatched, but entirely enshrouded, save the front, with luxuriant Ivy, is what a refined taste would desire and suggest, in shrubbery or distant pleasure-ground walks. And we would let the Ivy hang down wildly over the entrance, so that it did not obstruct it, and intertwine the most prominent parts, such as the front, with China and other climbing Roses, but discard all other climbers. It is usual to put a variety of climbing plants against such an arbour, in the place of Ivy. Nothing, however, can be so proper as Ivy, for the reasons we have given; and as Roses constitute, with it, one of the most beautiful combinations in nature, they will rather increase than diminish its picturesqueness.

The kind of Ivy best adapted for the purpose we have just mentioned is that called the Giant, or Irish Ivy; since it grows with the greatest rapidity, and its leaves are the most ample. By its aid, a summer-house may be so assimilated to the surrounding garden, as to heighten its interest, and actually add a pleasingly characteristic feature to its common aspect. Whereas, without some such clothing, the strange and formal erections often seen in the remoter parts of pleasure-grounds are in the highest degree disagreeable and out of character.

We stated, however, that there was another use for which Ivy is admirably fitted, but to which it is very inadequately applied; and that is carpeting the ground beneath plantations. It is a defect which all must have noticed in pleasure-ground plantings of every sort, that there is seldom any provision made for covering the ground, except by here and there a laurel or other evergreen shrub. Hence, the rankest weeds spring up unchecked, and impart an air of slovenliness and neglect, for which no amount of keeping in other particulars can atone.

Now the easiest mode of obviating this, is, by planting all such places with an undergrowth of Ivy. No shade will injure it. It will flourish anywhere, and in almost any circumstances; and when it has fairly become established, will effectually keep down all weeds, and present a constantly verdant and delightful aspect. It will do away with the necessity for digging over the plantations each year, and also for collecting the fallen leaves; as these last will sink down among the Ivy, and there fulfil the end for which they are designed, namely, that of supplying nourishment to the roots of the trees from which they fell. Either the common British Ivy, or the Irish Ivy, may be selected for this object, and those who would shrink from incurring much expense in procuring it, may find, in most districts, numbers of wild plants in spots where they are not required, and which may be readily transplanted, with a little care.

We wish our observations on the last head to apply to shrubberies as well as woods, and those in the smallest as much as in the largest gardens; provided the shrubs or trees are not so dwarf or so distant from each other as to be interspersed with flowering herbaceous plants. Thus, in little villa gardens, there is commonly a shrubbery walk, bounding a paddock, or extending round the garden. And since this is often used for winter exercise as well as summer recreation, the appearance of the ground beneath the trees would be very greatly enlivened by a covering of Ivy; and this would at once save a good deal of trouble, and be more appropriate than a dug border, a few imperfect flowers, or a mass of uninteresting or decaying weeds. The common Periwinkle is alike useful, and yet more interesting for its beautiful flowers. Yet, as it cannot be largely obtained, it must be reserved for the more conspicuous shrubberies, and those nearest the house.

That use of Ivy, however, which we principally seek to enforce in the present article, is one which we have only observed in two or three gardens, but which deserves to be far more extensively practised. It may be varied a little, according to taste or circumstances. The first mode of adopting it is to plant a strong specimen of the Irish Ivy on a lawn where an evergreen shrub, four or five feet in height, is desired. It may be supported, for a while, by a tolerably stout stake, of the requisite height; and not more than two or three stems should be allowed to rise from it. When these have reached the top of the stake, they must be stopped, in order to induce them to branch; and after the branches have been developed, they may be again pruned. This will serve to strengthen the stem or stems, and also produce a branching condition. The plant may then be left to nature; and it will, in a few years, form a fine strong shrub, with gracefully weeping shoots, which will sweep most agreeably over the turf with the least agitation of the atmosphere. As soon as the stems are sufficiently thick to support themselves, the stake may be removed; and it is then difficult to imagine a more elegant or interesting object.

The main point to be attended to in the early management of such a plant, is to prevent young shoots forming at the base of the stem, and assuming the ordinary trailing character. If this be permitted, not only will the leading growths be weakened, but the peculiarity of the specimen will be destroyed. At a subsequent period, when the wished-for form of the plant is thoroughly taken, a slight pruning may now and then be needful, to repress any shoots that evince an inclination to ramble too much; but it will be seen that, when the drooping character is once established, it will continue, without any tendance or assistance, for a great number of years.

An idea may be gained of the appearance of a plant so treated by comparing it to a weeping ash, or a weeping willow. Only, the Ivy will be so much more graceful in consequence of the greater length and sweep of its branches, and so transcendently interesting on account of its being a comparatively low shrub, and likewise an *evergreen*. It will have all the elegance of a climbing Rose, trained to a pole, and never pruned; and this elegance will be maintained throughout the winter, when things of that beautiful nature are rarely or never met with, except in a hothouse. And one of its highest recommendations is that it is suitable for the smallest places, and may, in fact, be most properly introduced to limited gardens.

An additional way in which Ivy may be employed advantageously in adorning pleasure-grounds, is by inserting old stumps or fragments of the trunks of trees, in picturesque spots, and planting Ivy at their base, that it may mantle them with its ever-verdant foliage. We have seen objects thus prepared which produced an exceedingly attractive effect; composing, in some instances, a sort of evergreen pillar, and in others a varied and irregular mass of verdure, which was improved rather than depreciated by occasional pieces of the dead trunk or branches being evident.

Most persons accustomed to notice the individual features of a landscape, must have remarked the beauty of the pillars of Ivy which are sometimes found in woods, and caused by the plant having destroyed or overgrown the tree to which it had clung. The extreme vigour of the Ivy, in such instances, enables it to throw out its branches several feet beyond the trunk; and when the top of the tree has perished, the pillar thus created is highly delightful. Such an object, then, divested of its tallness, which would be disagreeable but for its being among other trees, is obtained by the plan of which we are speaking. And it can be of any height, or any dimensions, within reasonable limits, as the nature of the locality may seem to dictate. If not more than from eight to ten feet high, it might even stand out on an open lawn, and would become, in a few years, a most richly picturesque addition to the pleasure-garden.

We were much struck with observing, last year, in Richmond Park and elsewhere, the association of Ivy with the common hawthorn; and with the mention of this we shall close our paper. It is customary to plant the hawthorn in parks, for the sake of its beautiful blossoms in spring, and its handsome red berries during autumn. In the cases referred to, the Ivy has either been planted with the trees, or has risen spontaneously about the time of planting; for its stems are quite as thick as those of the hawthorn, and it occupies, with its branches and leaves, all the centre of the tree. The consequence of this union is, that the plants are interesting in the winter as well as the summer, and that, in spring, when the delicate green foliage and white inflorescence of the hawthorn is in perfection, it is surmounted by a large coronet of the deepest verdure, and thus exhibits a group of colours which can never be duly admired till it is personally witnessed.

Our practical deduction is, of course, that, in planting the hawthorn in parks, it is advisable to put in a plant or two of Ivy at the bottom of the stem, and thus specifically ensure the beauty which we should in vain endeavour to portray.

FLORICULTURAL NOTICES.

NEW OR BEAUTIFUL PLANTS FIGURED IN THE LEADING BOTANICAL PERIODICALS FOR DECEMBER AND JANUARY.

ACHIME'NES MULTIFLO'RA. "This very beautiful stove plant inhabits dry banks, in woods, on the Serra de Santa Brida, and near Villa de Arayos, in the province of Goyaz, Brazil; and seeds were sent home from thence by Mr. Gardner, its discoverer. The plants flowered first at the Royal Botanic Garden of Glasgow, and then at Kew. The autumn has been its season of blossoming with us, and it continues long in that state, a succession of flowers continually expanding. The fringe on the limb of the corolla is extremely variable. The whole habit of the species is so extremely like that of *Gloxinia icthyostoma*, that it seems contrary to nature to place it in a different genus; but Mr. Gardner observes that the bifid stigma, and entire annulus of this plant, prove it to belong to *Achimenes*." According to Mr. Gardner, it is an annual species, with a simple stem, opposite ovate coarsely-serrated leaves, and very numerous axillary flowers, which are large, and of a pale lilac tint. *Bot. Mag.* 3993.

BEGO'NIA COCCI'NEA. "Unquestionably the most beautiful of the many handsome species of *Begonia* now known to our collections, and apparently a free flowerer. It was imported by Mr. Veitch, of the Exeter Nursery, from the Organ Mountains of Brazil, that rich storehouse of vegetable beauties, being there detected by Mr. Lobb, in 1841. It blossomed at Mr. Veitch's nursery soon after it was received, namely, in April, 1842, when it was exhibited at the apartments of the Horticultural Society. When the plants become larger, and the blossoms, consequently, more copious, it will be a truly splendid species; and, like most of the *Begonias*, its flowers continue a long time in perfection." The plant seems to have a shrubby dwarf habit, with a rather stout knotted stem. The leaves are alternate, very unequal, between ovate and oblong, concave, thick, and fleshy, and having the margin many-toothed, and bordered with red. The peduncles are entirely red, having red branches and red bracts. The blossoms are bright scarlet. *Bot. Mag.* 3990.

BOSSIŒ'A VIRGA'TA. "A Swan River species, detected and introduced to this country by Mr. James Drummond, by seeds, received by Mr. Murray, in the Glasgow Botanic Garden, where the plant flowered in June, 1842. The species is perhaps most nearly allied to *B. scolopendrium*, and to *B. ensata*; but may be known from both by its bearing leaves, and pretty copiously, at the same time with the flowers. These flowers are highly ornamental, and the plant has a very lively appearance when in blossom." The blooms are small, of a yellow and red or reddish brown tint. *Bot. Mag.* 3986.

CLE'MATIS CŒRU'LEA; *var.* GRANDIFLO'RA. The flowers of this fine variety are said to be twice the size of those of the species, and their colour, too, is more inclined to be purple. In other particulars, it is the same as *C. cœrulea*. *Bot. Mag.*

COBU'RGIA VERSI'COLOR. "This beautiful plant is the produce of the excursions of J. Maclean, Esq., over the Peruvian Andes from Lima, where he did not see it in flower, and the exact place of its growth is not noted. The large species of *Coburgia* are found deeply imbedded in rich alluvial soil, in the clefts on the summits of rocks, and on the edge of precipices. They flower sparingly in their native land, and much difficulty has been found in making them bloom in Europe. Those who cultivate the bulbs for sale, may plant them in the open ground, taking them up to lie dry during the winter; but, on the mountains where they grow, the temperature varies less than with us, and the principal division of seasons is dry and wet. There the *Coburgia* preserves its leaf often the whole year, and flowers in the heat of December and January, which answers to our June and July, and that period has been preceded by the free growth of the leaf. In order, therefore, to make the old bulbs flower, we ought to obtain a vigorous state of growth before Midsummer, and at that time, if bloom does not appear, place them in a hotter situation." *C. versicolor* has large blossoms, which vary from red to a very pale brownish white, and are tinged and marked with green. *Bot. Reg.* 66.

DENDRO'BIUM SANGUINOLE'NTUM. "Probably there is no plant among all the species of *Dendrobium* now known to our gardens which is more delicately beautiful than this. Its colours, too, are so singular as, on that account alone, to render it an object of much interest; for here we have the cyanic and xanthic tints in one and the same flower. We are always prepared to find red spots on a yellow ground, and *vice versâ;* but it is a most unusual thing to find clear pure violet on petals the whole remainder of whose tint is yellow. In this plant, however, the combination occurs, producing a very gay and unexpected effect. It was sent from Ceylon to His Grace the Duke of Northumberland, by Mr. Nightingale, and flowered at Syon in August last. It has pendulous stems, like those of *D. Pierardii*, but of a delicate purple when young; the leaves, too, are stained underneath and at the edges with the same colour. The flowers are as large as those of *D. aggregatum*, of a clear fawn-colour, with the tips of the segments and lip stained with a deep rich violet. There is, however, a *scarlet* spot in the middle of the lip." A similar species or variety exists, with a larger lip, and having the scarlet spot in the middle of the blossoms, but destitute of the violet tips. *Bot. Reg.* 6.

DIOSPY'ROS SAPO'TA. The flowers and fruit of this exceedingly rare plant have been produced in the rich collection of His Grace the Duke of Northumberland, at Syon House; and the circumstance is the "more interesting, since, in the Calcutta Botanic Garden, whence it has been sent to Europe, Dr. Roxburgh informs us that, though it grows most luxuriantly, and blossoms in the hot season, it has never perfected its fruit." The Syon plant was obtained from Messrs. Loddiges, who had it from Calcutta with the name of *D. edulis*. This title, however, does not exist in Dr. Wallich's catalogue, and the plant is evidently *D. Sapota*. It appears to be a native of the Philippine Islands, rather than of the Mauritius, or India, as was once thought. It is a tall and handsome shrub, with ample evergreen foliage, and greenish white inconspicuous blossoms. The fruit is large, roundish, and has a pulp of an agreeable flavour. "The fruit-bearing plant at His Grace the Duke of Northumberland's is about ten feet high. Its flowers are produced copiously in the autumnal months, and the fruit ripens in April of the following year." *Bot. Mag.* 3988.

FU'CHSIA SPLE'NDENS. "Fine a plant as *F. fulgens* is," says Dr. Lindley, "we regard this as being still more beautiful, because of the vividness of the scarlet and pale green colours with which it is adorned. In habit it much resembles it, and, in fact, was supposed at one time to be the same species; but it evidently differs in many important circumstances. The leaves are much more heart-shaped, and have a longer and more tapering point. The flowers have much larger stalks, and have themselves far more of the campanulate figure. The stamens moreover project a long way beyond the mouth of the tube. When very young, the foliage and lengthening branches are quite hoary with down." It was introduced from Guatemala by the Horticultural Society, through Mr. Hartweg, who found it "on the mountain called Totontepeque, at the height of 10,000 feet above the sea;" and it will, therefore, probably be one of the hardiest of the tribe. It should "neither be cultivated in a very rich soil, nor in a large pot, for both these circumstances have a tendency to prevent its flowering freely." The flowers are short, and have a somewhat crumpled appearance. They are certainly not so showy as those of *F. fulgens*. *Bot. Reg.* 67.

HOVEA RACEMULO'SA. A species with paler and less showy flowers than *H. pungens* or *Celsii*, but "by no means unattractive, when well contrasted with plants whose colours are not bright enough to kill it. It belongs moreover to a set of greenhouse shrubs of easy cultivation and small size, which are well adapted for decorating the shelves of the conservatory. It is a native of the Swan River Colony, whence the seeds were obtained by Captain James Mangles, R.N. It first flowered in the garden of R. Mangles, Esq., of Sunning-hill." Although allied to *H. ramulosa*, it differs from that species in having more pointed leaves, with a less shaggy surface, and small axillary *racemes* of flowers, instead of solitary ones. "It was found by Mr. Cunningham along the upper branches of the Brisbane River in Moreton Bay, in the year 1829." *Bot. Reg.* 4.

LA'THYRUS NERVO'SUS. "A handsome and very desirable greenhouse plant, discovered by Cameron, in rocky places, at Monte Video. Sellow gathered it in the same locality, and it appears, in the thirteenth volume of the Linnæa, by the late lamented Dr. Vogel, both under the name of *nervosus* and *trigonus*. Tweedie has the credit of introducing the living plant to our gardens, having sent seeds to his Grace the late Duke of Bedford, from Puerto Bravo, in South Brazil. If trained neatly to a trellis in a pot, this plant makes a very pretty appearance in the greenhouse with its glaucous foliage and large blue flowers. We learn that in summer it flowers well in the open border." *Bot. Mag.* 3987.

MAMMILLA'RIA TURBINA'TA. "One of the most distinct of all the species of this numerous genus, and not likely to be confounded with any other. It is, too, of rare occurrence in collections, and only known to us from having been received from the stoves of Messrs. Lee, at Hammersmith, where it bears the name here retained. It is probably a native of Mexico, and flowers with us in June." It is altogether of a pale glaucous hue, with small spines only on the mamillæ. The blossoms are pale yellowish or straw coloured, tipped with red on the outside, about an inch in diameter, and borne on the upper part of the plant. *Bot. Mag.* 3984.

ODONTOGLO′SSUM CITRO′SMUM. An extremely graceful and delightful plant, "imported by George Barker, Esq., of Birmingham, from Mexico, and given to Thomas Brocklehurst, Esq., of the Fence, near Macclesfield, by whose gardener it was exhibited at one of the great meetings of the Horticultural Society, at Chiswick, in 1842. It has large snow-white and rose-coloured flowers, of great beauty, exhaling a delicate smell of lemons." The species has roundish pseudobulbs, compressed at the sides, and having very sharp edges. The raceme of flowers is about a foot long, elegantly disposed, and bearing many blossoms. These last are almost as lovely as those of *Phalænopsis amabilis,* but the white is less pure, being tinted with pale pink. In addition to the "partial parallelism of the base of the labellum with the column, and the presence of a pair of parallel raised plates at that part," which characterises the genus *Odontoglossum,* the present species has a toothed wing or membrane at the back of the anther. *Bot. Reg.* 3.

PHLOX, VAN HOUTTE'S. "For a knowledge of this remarkable plant we are indebted to M. Louis Van Houtte, nurseryman, of Ghent, who sent it to us in October last, in full flower, but without any account of its origin. It is a variety of remarkable beauty, looking as if *P. suaveolens* had been crossed with *P. caroliniana,* bearing on a white ground a crimson evidence of its paternity. The appearance of the plant is beautiful, far beyond anything yet seen in the genus *Phlox* ; and we were almost going to say, beyond anything among the hardy perennials in cultivation. An approach to it was exhibited last year by Mr. Mountjoy, of Ealing, but it was only an approach, with a much paler stain on the corolla. That, however, was very pretty ; and well worth the acquisition of the lovers of gay flowers." *Bot. Reg.* 5.

SARAU′JA SPECTA′BILIS. "This fine and undescribed species of *Sarauja* was raised by Mr. Knight, of the Exotic Nursery, King's-road, Chelsea, from seeds imported from the republic of Bolivia, in 1838. One seedling only was reared, and this is now (1842) twenty inches high, bearing seven branches, with large and delicate foliage, and no less than thirty-seven panicles of fragrant flowers ; some fully expanded, others coming in succession, so that its beauty is of long duration ; and we scarcely ever saw any stove plant more truly elegant and graceful." The leaves are obovately-lanceolate, much serrated, and hairy ; while the flowers are white, with a large cluster of yellow stamens in the centre. *Bot Mag.* 3982.

STENOME′SSON VITELLI`NUM. "A bulbous plant from Lima, whence it was sent by John Maclean, Esq., to the Horticultural Society, with whom it flowered in February, 1842. The yellow flowers, and their general appearance, remind one of the yellow Calostemma of New Holland ; only they are larger. It is essentially distinguished from the other species by its broad leaves, depressed bulbs, and the intermediate teeth of the cup being obtuse and undivided. The plant flowered in a cool stove, where it had been kept warm and moist while growing, but cooler and drier while at rest. It is among the prettiest of the Western American bulbs ; but is at present extremely rare." *Bot. Reg.* 2.

TALI`NUM TERETIFO`LIUM. "A pretty little herbaceous plant, seldom seen in cultivation. It inhabits various parts of North America, from Texas as far north as Pennsylvania, trailing over naked rocks, its favourite place of resort. In our gardens it is treated as a greenhouse plant, and there it forms neat patches of lively purple flowers. It is, however, rather rare." Plants in the Horticultural Society's Gardens, which had been raised from seeds received from M. Otto, of Berlin, flowered in 1841. *Bot. Reg.* 1.

ZI`CHYA VILLO`SA. A pretty species, with ovate, acute, very villous leaflets, and fine heads of red and purple flowers on long peduncles. It is a "free-growing greenhouse climber, well suited for either training round some ornamental wire-work, fastened to a pot, or trained to the pillars or rafters of a greenhouse. The plant grows freely in a mixture of loam and sandy peat, when not broken very fine, and the pots are well drained. It is easily increased by cuttings, or by seeds, which are produced freely when the plants get large." It thrives "best in a cold frame all summer, with the back turned to the sun, but with the lights off during fine weather." *Bot. Reg.* 68.

NEW OR INTERESTING PLANTS RECENTLY IN FLOWER AT THE PRINCIPAL SUBURBAN NURSERIES.

Achime'nes grandiflo'ra. This is a very noble new species, with large hairy leaves, and pale crimson flowers, which are nearly or quite the size of those of *A. longiflora.* It has, at present, bloomed but imperfectly and sparingly in the nurseries of Mr. Low, Clapton, and Messrs. Rollisson, of Tooting; in both which places the plant is still showing flower. At a more favourable season, however, it will doubtless be very handsome, and become a most delightful accession to the genus.

Bra'ssia brachia'ta. A novel species, blooming in the Tooting nursery, where it is known by the name of *B. Urayæ.* It is not peculiar in the pseudo-bulbs and leaves; while the colours of the flowers are also common, being greenish-yellow, with dark brown spots and blotches. The lip of the blossom is, however, particularly large, and the species is altogether a showy one.

Mane'ttia bi'color. Messrs. Veitch, of Exeter, imported this rather pretty plant from Brazil, and it flowered with those gentlemen a considerable time back. It is now beginning to bloom with Messrs. Rollison, of Tooting. The leaves are pale green, and a little glaucous. The flowers are small, with a long slender tube, and having an agreeable combination of scarlet and yellow. It is an interesting climber for growing in pots, and twining round a low trellis.

Rena'nthera matuli'na. Introduced from Manilla by Mr. Cuming, and lately flowered by Messrs. Rollisson, of Tooting. It is noticeable for its comparative smallness, and for its neat brown and yellowish flowers, which continue open several months.

OPERATIONS FOR FEBRUARY.

Chill and somewhat dull as is usually the month of February, it seems only to encircle with a stronger spell the slumbering forms of nature, and to close, yet more strictly, the vegetable storehouses of the earth. Days sometimes occur, however, in which a sort of earnest is given of the approaching spring; and plants, stimulated by the genial warmth of such periods, are often induced to awaken their dormant energies, and to commence growing ere any dependence can be placed on the future kindliness of the weather.

The great business of the culturist, therefore, during the present month, is to keep everything that comes beneath his actual control as backward as possible. We, of course, refer solely to those plants which are grown in houses or frames, or are otherwise artificially sheltered; since no such agency can by any means be exerted on those which are in the open ground. We shall assume that, accordant with our previous directions, such plants as develop themselves naturally in spring, have been prevented from growing, either by comparative coldness and dryness, or by the actual removal of their pushing shoots, up to the present time. And what we have now to enforce is the extreme desirability of maintaining that state till the heat and light of the sun are sufficiently intense and permanent to render any advancement healthy. A trifling neglect of this circumstance might nullify all the efforts of the previous two or three months, and at once bring about the results which it has been so much the endeavour to avoid.

As hinted above, there are three ways in which torpidity may be preserved in greenhouse and stove plants; or that portion of each of them which it is not wished to excite before the natural period. The first method is by a due regulation of the temperature. And this is the most important, because it necessarily affects the second mode which we shall have to name. To descant on the absurdity of maintaining an artificial heat when the plants would be altogether better if simply guarded from frost, will appear trite for us, as we have so often previously uttered the same opinions. Cultivators cannot, however, believe either our statements or our arguments; for to obtain full and proper credence for a principle is to ensure its being carried out. We must again, nevertheless, distinctly affirm that such an increase of temperature as impels plants to begin growing at any time prior to the season in which everything without is provided for making their growths vigorous and fine, is extremely prejudicial. And where this temperature is created by fires, it is additionally hurtful. Fire-heat, therefore, is alone to be used when frost or cold winds prevail; and then but scantily, and with due caution.

Our remarks would yet fail much of their point if we restricted them to artificial heat. A very warm day, or even a week, occasionally happens at this season; and if the houses are kept closed on such occasions, the plants will certainly suffer by being prompted to grow. It is necessary, then, in all such weather, to throw open the sashes, and reduce the temperature as low as possible, that the external influences may be counteracted. And perhaps this is the matter in which cultivators err more than in regard to the application of artificial heat. They who perceive the impropriety of employing fires, save in severe weather, will allow the temperature to rise to almost any height from natural causes, conceiving that to follow nature is the correct mode of proceeding. It should be remembered by such that a heat occasioned by the sun in February has as bad an effect on plants as a temperature raised by other means; inasmuch as it is the undue excitement which both produce that constitutes the evil.

A second means of keeping exotic plants comparatively dormant is by retaining their roots and the atmosphere in a moderately dry condition. They must, of necessity, be more or less watered in proportion to the temperature; but where this is rightly repressed, they should have very little fluid this month. And on their supply of water, the dampness of the air will in a great measure depend. So that, to preserve them tolerably dry at the roots, is to provide for the dryness of the atmosphere.

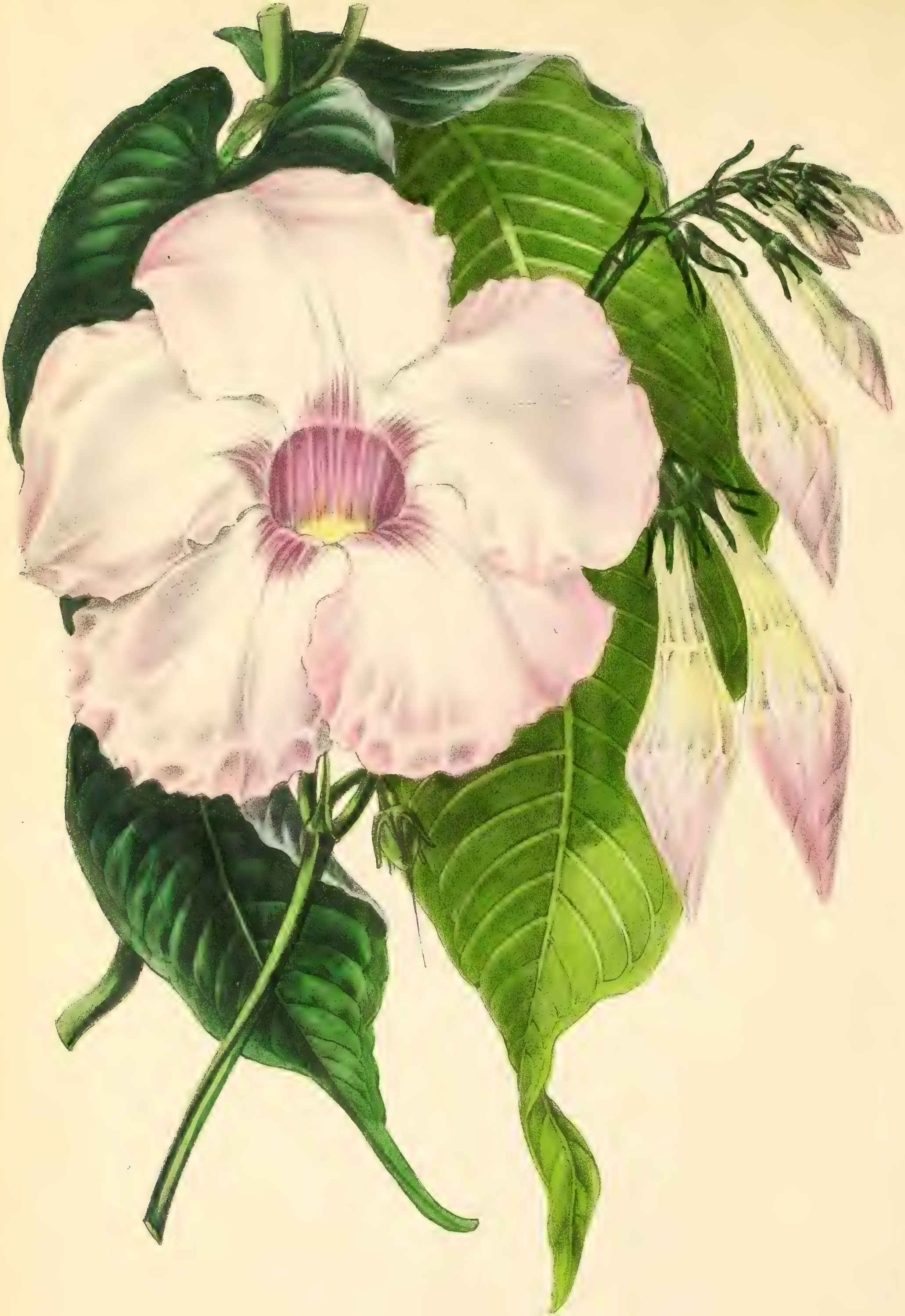
The third remedy for premature development will scarcely be wanted if the two former ones are consistently practised; as it is the positive removal of the shoots that have begun to expand, or rather, have acquired two or three inches in length. Sometimes, however, this will arise in spite of the utmost care; and when it does, there are few plants that will not be benefited by a check of that description. To take away a weakly shoot is not merely to put a temporary stop to the plant's progress. It is to secure a subsequent growth at a more favourable period, and, in most instances, to promote dwarfness and bushiness.

In the preceding observations, the management of all exotics that have been housed, or that are always kept in houses, may be said to be comprised. Where specimens have to be forced, or Orchidaceous plants to be grown, a different course must necessarily be pursued; and a moisture, such as is ever given off by fermenting leaves or bark, is unquestionably best for forced plants.

With regard to sheltered plants that are growing in the open soil, the way of keeping them from starting too soon, or becoming blanched, is to expose them, to the fullest practicable extent, whenever the weather is at all mild or propitious; and a plan should be adopted for giving them a circulation of air, by having opposite apertures in the covering, when that covering cannot be entirely taken off.

The warmer parts of this month, towards its close, are by some thought the most suitable for digging flower-borders, as the bulbous plants in them, being now mostly above the ground, can be seen, and are not so liable to be injured. It is a rule which will hold good in the majority of cases, that shrubs should be pruned before their buds are unfolded. Whatever may be said to the contrary, it is notorious that the uppermost buds of roses expand first; and hence if the shrubs are left unpruned till such expansion takes place, it will be found that the lower buds, and those which are to be preserved, will have been very materially impoverished. We have frequently noticed roses so treated, forming the most imperfect shoots, and hardly flowering at all.

A few tender annuals may be sown for the greenhouse; and a succession should be provided by a sowing each fortnight. Tulips and other bulbous plants ought now to be effectively guarded from slugs. Hyacinths, grown in windows, should be daily turned, that their stems may not incline in one direction. Dahlia roots may be examined, lest they should get too dry or rotten. A decaying root, if taken away in time, will do no injury; but if suffered to remain, it may spread decay amongst the others, and do a large amount of damage.



S. Holden [illegible]

Echites splendens.

ECHÌTES SPLÉNDENS.

(Splendid Echites.)

Class.
PENTANDRIA.

Order.
MONOGYNIA.

Natural Order.
APOCYNĀCEÆ.

Generic Character.—*Calyx* small, five-parted. *Corolla* salver-shaped, with a naked throat and tube; segments of the limb unequal-sided. *Stamens* enclosed; anthers sagittate, cohering by their middle to the stigma, having the hind lobes without pollen. *Ovaria* two. *Style* one, filiform. *Hypogynous scales* five. *Fruit* of two slender follicles.

Specific Character.—*Plant* apparently a half-deciduous climber. *Stems* smooth. *Leaves* elliptical, acuminate, undulated, cordate at the base, reticulated, with sunk veins on the upper surface, pubescent beneath. *Bracts* awl-shaped. *Calyx* with awl-shaped segments. *Corolla* funnel-shaped, pale pink; lobes roundish, subacute. *Stamens* inserted in the upper part of the tube of the corolla.

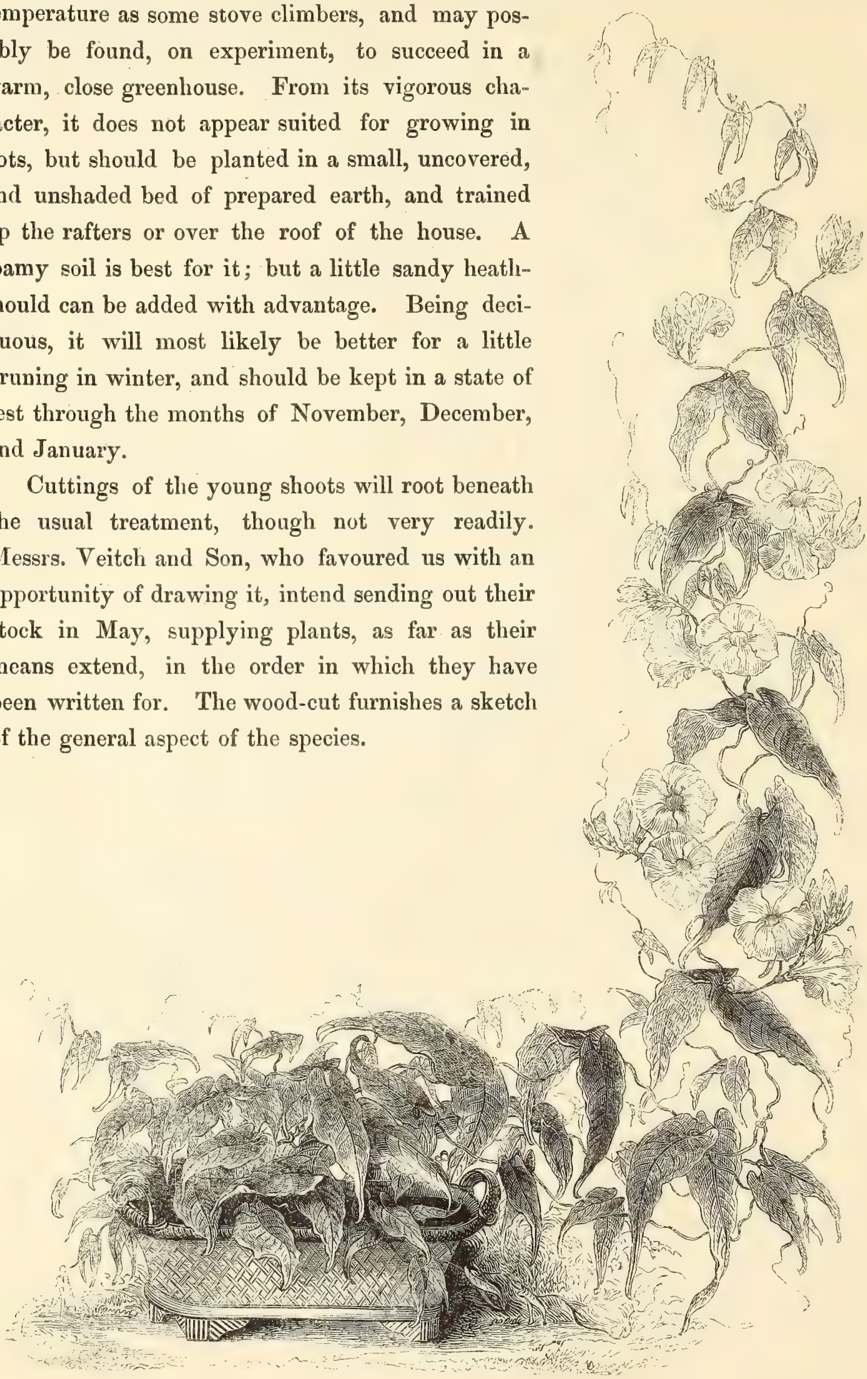
Specimens of this noble plant were exhibited, in a flowering state, at the July meeting in the Gardens of the Horticultural Society, and a prize was then awarded them. The public owe its introduction to Messrs. Veitch and Son, nurserymen, of Exeter, whose collector, Mr. William Lobb, discovered it, in a very elevated situation, on the Organ Mountains of Brazil. Only three living plants were found, and these all reached Exeter in a healthy condition.

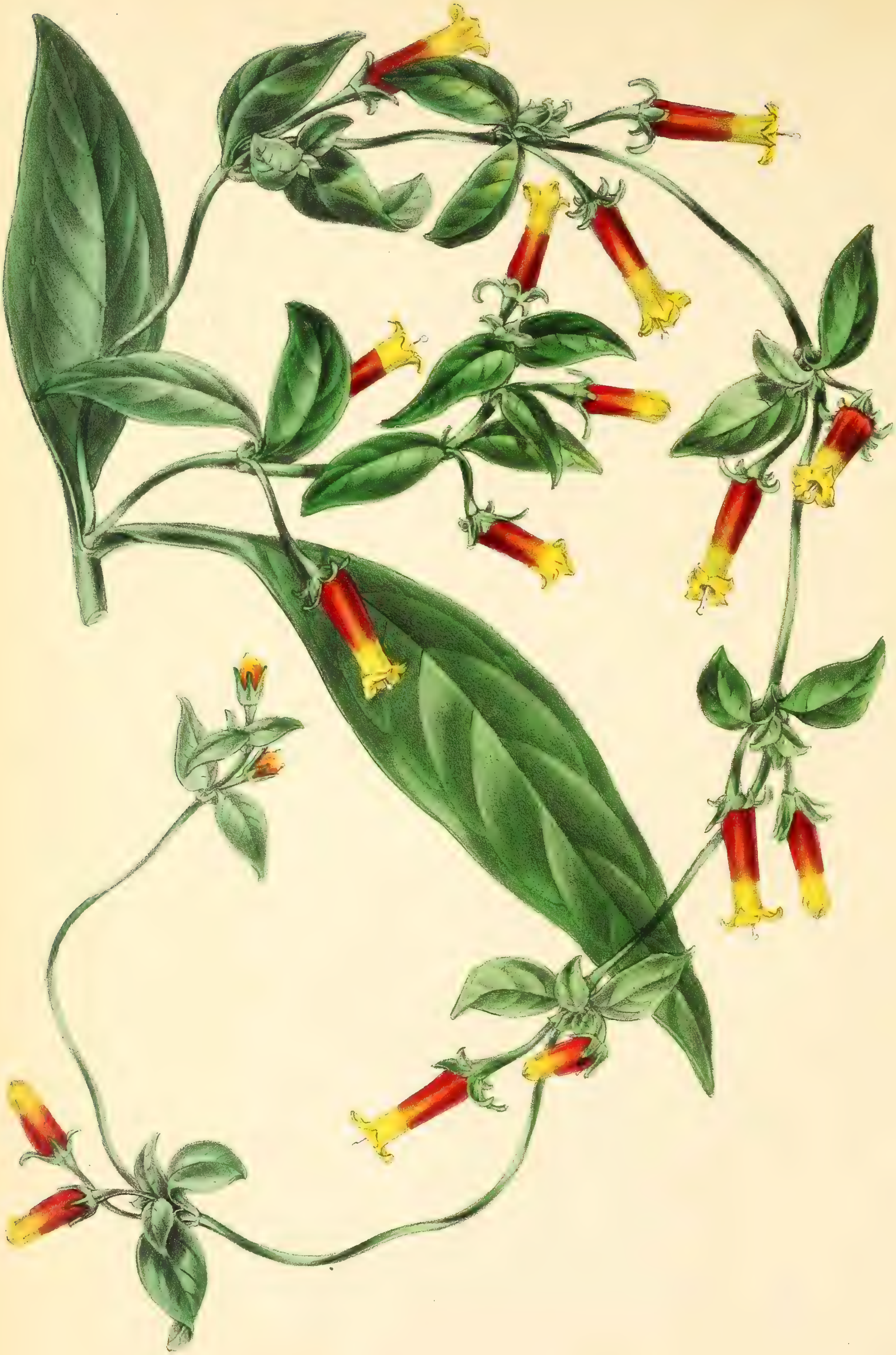
From the specimen which flowered in July last, blossoms were developed, in bunches containing nine or ten buds, each opening in succession, till October. After this period, the leaves fell, thereby proving the plant somewhat deciduous, and the plant remained dormant for a time. It is now, (February,) as Mr. Veitch informs us, breaking strongly, and will doubtless bloom with increased vigour in the ensuing summer.

All the beautiful species of *Echites* (and, indeed, most of our stove climbers) seem to be eclipsed by this very splendid plant. Its habit is very luxuriant, and the leaves are of an unusual size; while the flowers, which are borne in large clusters, and expand only one or two at a time, are exceedingly lovely, their tint being a light blush, which deepens towards the margin, and in the centre, but the variations of which are so gentle and gradual as to be highly delightful. The breadth of each blossom is from three to four inches, and the petals fall back a little, and are slightly undulated in a very graceful manner.

Coming from an elevated district, it will probably not require so high a temperature as some stove climbers, and may possibly be found, on experiment, to succeed in a warm, close greenhouse. From its vigorous character, it does not appear suited for growing in pots, but should be planted in a small, uncovered, and unshaded bed of prepared earth, and trained up the rafters or over the roof of the house. A loamy soil is best for it; but a little sandy heath-mould can be added with advantage. Being deciduous, it will most likely be better for a little pruning in winter, and should be kept in a state of rest through the months of November, December, and January.

Cuttings of the young shoots will root beneath the usual treatment, though not very readily. Messrs. Veitch and Son, who favoured us with an opportunity of drawing it, intend sending out their stock in May, supplying plants, as far as their means extend, in the order in which they have been written for. The wood-cut furnishes a sketch of the general aspect of the species.





S. Holden, del & Lith

Manettia bicolor.

MANÉTTIA BÍCOLOR.

(Two-coloured flowered Manettia.)

Class.
TETRANDRIA.

Order.
MONOGYNIA.

Natural Order.
CINCHONÀCEÆ.

GENERIC CHARACTER.—*Calyx* with a turbinate tube, and the limb parted into as many lobes as there are corolline segments, or double that number, and often furnished with lobules in the recesses between the segments. *Corolla* funnel-shaped, with a tube, a hairy throat, and a four or rarely five-parted limb. *Anthers* sessile in the throat. *Capsule* ovate, compressed, crowned by the calycine lobes, dehiscing from the apex to the base at the dissepiment. *Seeds* imbricate, almost sessile, peltate, surrounded by a winged membranous border, which is usually toothed. *Embryo* erect, in a fleshy albumen, cotyledons foliaceous, lanceolate.—*Don's Gard. and Botany.*

SPECIFIC CHARACTER.—*Plant* a climbing shrub, seemingly evergreen. *Leaves* opposite, nearly sessile, lanceolate, somewhat pale green and acute, slightly glaucous. *Calyx* having four or eight segments, which are lanceolate and reflexed. *Corolla* tubular, about three quarters of an inch long, a little swollen at the base, red below, yellow towards the top, with a spreading limb, the lobes of which are rather reflexed.

THIS is another of the interesting plants which Messrs. Veitch and Son, of the Mount Radford nursery, Exeter, have added to our collections, through Mr. William Lobb, who found it on the Organ Mountains, in the interior of Rio Janeiro. Doubtless it exists, principally, at a considerable elevation, for it is proved to thrive best in the temperature of a greenhouse here.

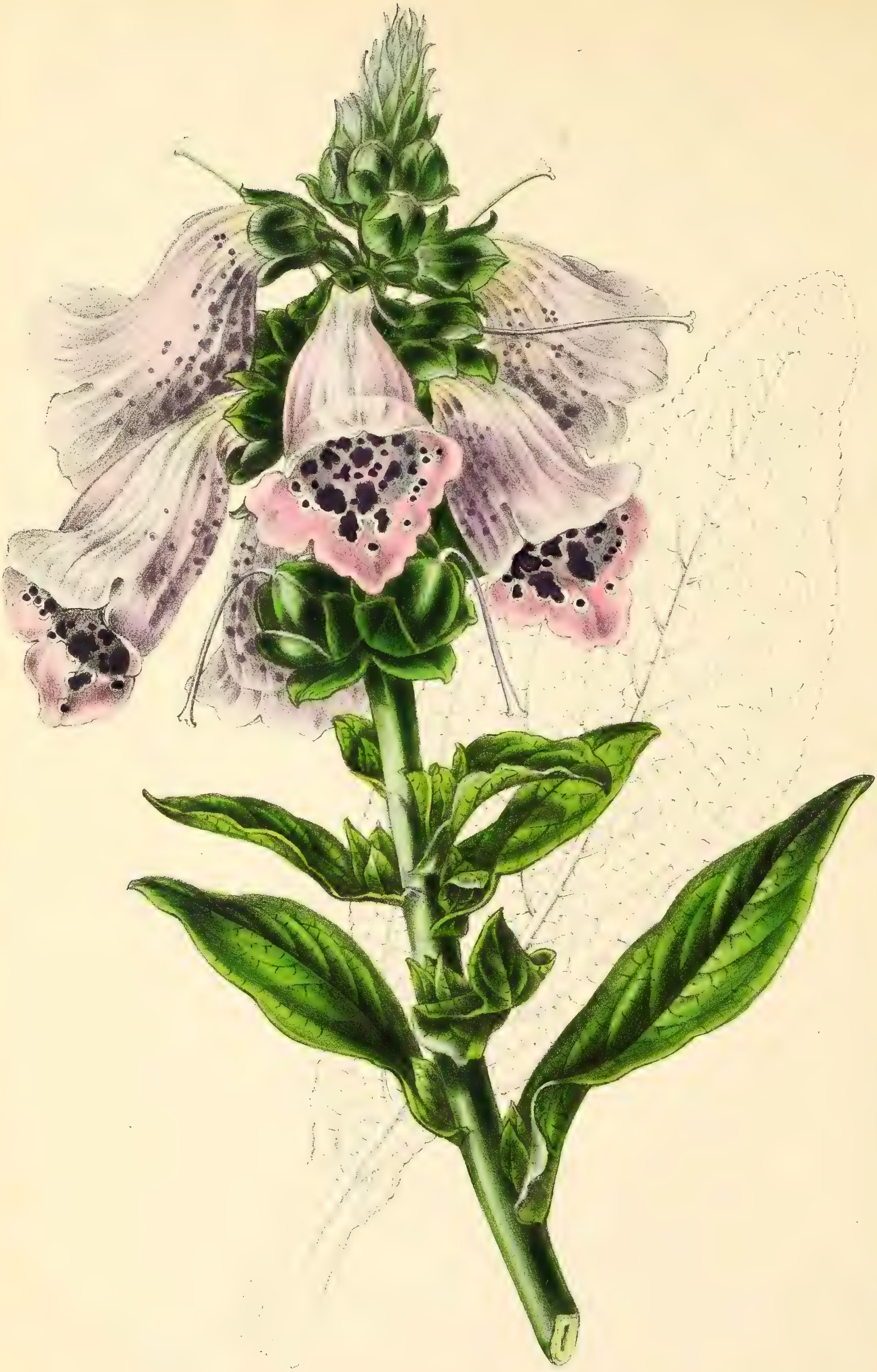
It is an elegant plant, with stronger stems and broader foliage than *M. cordifolia*, but quite as graceful in its aspect. The flowers are, however, very much smaller than those of that species; though their comparative diminutiveness is atoned for by their profusion, and by the pleasing combination of scarlet and deep yellow they present. Both these colours are very lively, and the red being at the base, and the yellow at the summit, they are particularly attractive.

The species is valuable also, in the same way as *M. cordifolia*, for blooming throughout such a lengthened period; and it will be prized, moreover, because it seems naturally to come into flower in the month of March, and may, by the application of a trifling fire-heat, be made to blossom as early as January. Messrs. Veitch apprised us, in February, that they then had it finely in bloom; and we had observed it elsewhere a month previously.

Although we have said that it demands merely a greenhouse heat, we must remark that we spoke of a rather close greenhouse, where the atmosphere is moister than in the generality of cases. Messrs. Veitch tell us that a Pelargonium house appears very favourable ; and we have no doubt that a house devoted to Camellias would be equally good, if the plant could have sufficient light. Probably, in conjunction with *M. cordifolia*, it would grow most propitiously in a house of a temperature intermediate between that of the greenhouse and the stove, the heat being maintained above that of the greenhouse by keeping the sashes closer, and not by fires.

The soil used for it is a compost of loam, heath-mould, and sand, in the usual proportions. It is not adapted for planting out, and training up the rafters ; the flowers being too small to make a sufficient display when so far from the eye, and the habit not being diffuse enough. It should be trained round a barrel-shaped trellis, of about two feet in height, or over a globular one, of the same dimensions. If the branches are twined pretty closely, it will form a mass of beautiful foliage and flowers through the greater part of the season.

Cuttings root with the greatest readiness in a warm place.



S. Holden, [illegible]

Digitalis purpurea, superba

DIGITÁLIS PURPÙREA, *var.* SUPÉRBA.

(Purple Fox-glove; superb variety.)

Class.
DIDYNAMIA.

Order.
ANGIOSPERMIA.

Natural Order.
SCROPHULARIÀCEÆ.

Generic Character.—*Calyx* unequal. *Corolla* tubular at the base, funnel-shaped; limb obliquely four-lobed; upper segment much shorter than the lower one or lip, and is, as well as it, imbricate in æstivation. *Rudiment* of the fifth stamen hardly conspicuous. *Stigma* simple, or bilamellate. *Capsule* ovate, acuminated.—*Don's Gard. and Botany.*

Specific Character.—*Leaves* oblong, rugose, crenated; calycine segments ovate, oblong. *Segments of corolla* transverse, acute; peduncles straight, about equal in length to the calyxes. *Plant* pubescent. *Corolla* large, purple, marked inside with dark purple spots, which are edged with white.—*Don's Gard. and Botany.*

Var. Superba.—*Flowers* very large, pinkish white, with great purplish blotches in the lip.

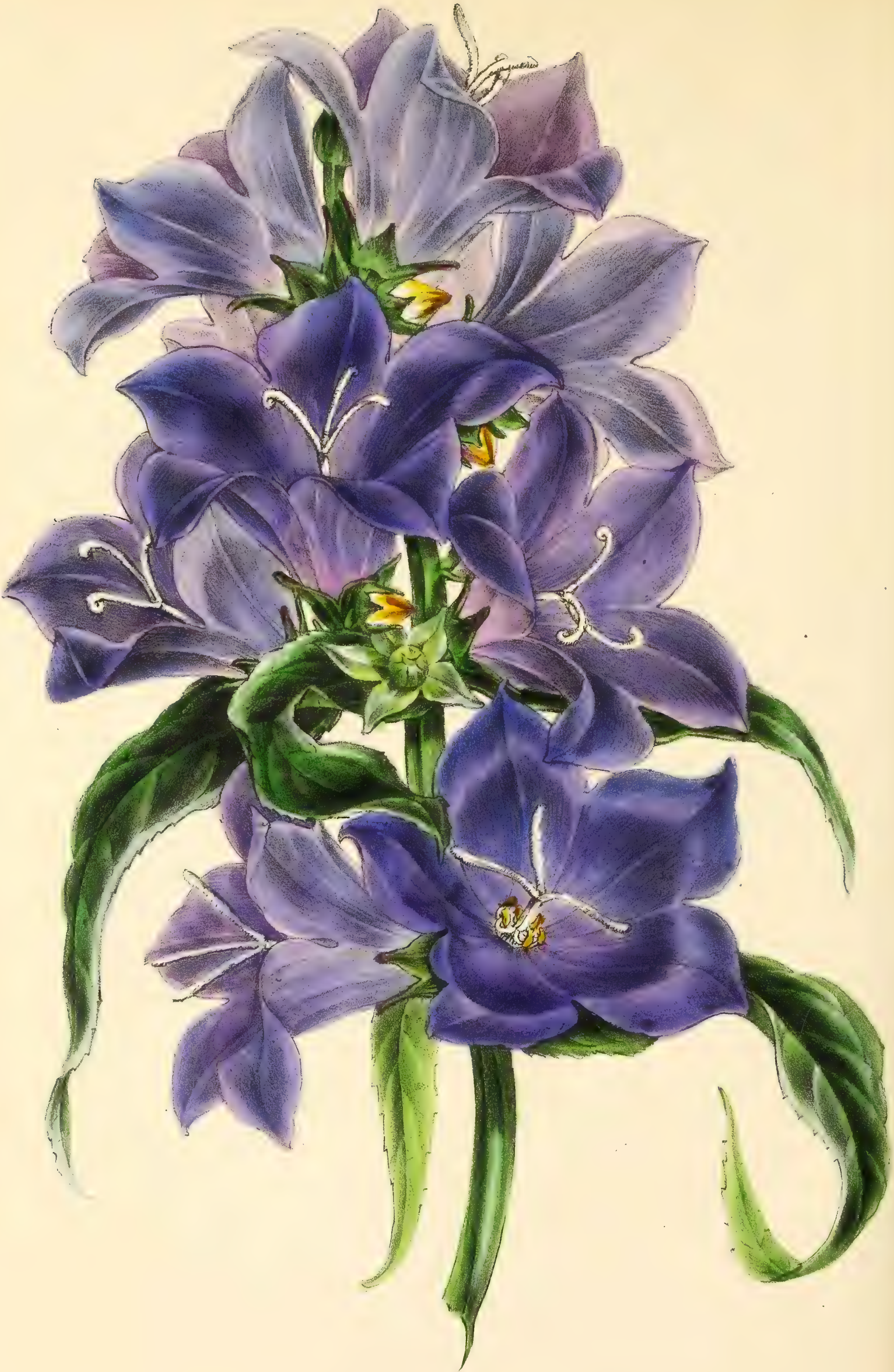
It has often been to us a matter of regret that, in those localities where the common Foxglove abounds, it should not be turned to account in an ornamental point of view, by being planted to enrich the ruder and more natural parts of large pleasure-grounds. We are familiar with a garden which, in one of its outlying portions, presents a wild and deep dingle, through the bottom of which a small stream dashes, while one of its banks is entirely unclothed, save with a few scattered trees, and a profusion of gay indigenous flowers. Among these last, the Foxglove is conspicuous, and when it is in blossom the effect which its numberless stately heads of flowers produce is extremely striking.

So great, likewise, is the beauty of its blooms, that it seems a pity that it is not frequently sown in districts where it does not naturally flourish, as an undergrowth to ornamental woods, and even as a decoration to shrubbery borders. Few exotics are more handsome; and we know not why its being a British plant should be allowed to operate to its exclusion from cultivated scenes.

The variety, however, which we now produce has higher pretensions than the common species, and will at once, we think, be admitted to a place among the hardy productions of foreign countries. It is, in truth, a very handsome herbaceous plant, of a better habitude than the old species, because not growing so tall, and being more compact in its appearance. The flowers, moreover, are larger, and of so delicate a hue that it is difficult to depict their colours upon paper. Commonly, they are of a whitish tint, slightly mingled with blush; but they occasionally acquire a deeper pinkish hue, such as is shown in our plate. The purple spottings in the lip are much broader than those of *D. purpurea*, and, as with it, they are surrounded by a white border, which throws them out into fine relief. Altogether, the blossoms rank among the most attractive in creation, as was proved by the attention they drew at one of the grand Chiswick exhibitions last year, when Mr. Gaines, of Battersea, sent a flowering specimen, the blooms of which were rather lighter-coloured than that now before us.

We procured our drawing in the nursery of Messrs. Young, Epsom, in the summer of 1842. It blooms for several months, and constitutes a most valuable border plant, requiring the most ordinary treatment, and being increased by division.

The flowers of the species are said to resemble the finger of a glove, and hence the generic name from *digitalis*, belonging to a finger.



S. Holden, del & Lith

Campanula grandis.

CAMPÁNULA GRÁNDIS.

(Large Bell-flower.)

Class.
PENTANDRIA.

Order.
MONOGYNIA.

Natural Order.
CAMPANULACEÆ.

Generic Character.—*Calyx* five-cleft, having the sinuses usually covered by appendages. *Corolla* five-lobed or five-cleft at the apex, usually bell-shaped. *Stamens* five, free; filaments broad at the base and membranous. *Style* covered by fascicles of hairs, except at the base. *Stigmas* three to five, filiform. *Ovarium* woolly, inferior, three to five-celled. *Capsule* three to five-valved, dehiscing laterally. *Seeds* usually ovate, flattened, sometimes ovoid, and small.—*Don's Gard. and Botany.*

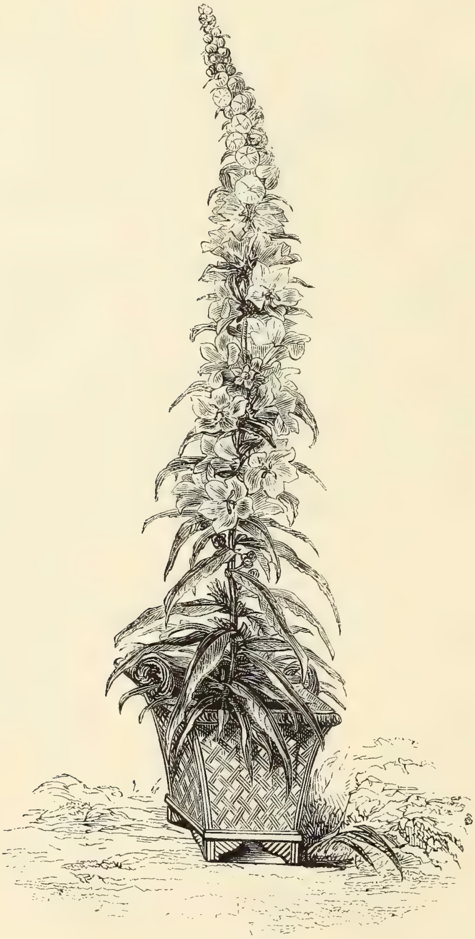
Specific Character.—*Plant* an herbaceous perennial, growing three or four feet in height. *Leaves* very long, somewhat lanceolate, acuminate, serrated, slightly undulated, and often recurved towards the extremity. *Flowers* numerous, axillary, almost sessile, rather deep blue, very large. *Corolla* flatly campanulate, segments nearly equal, somewhat ovate, acute.

A finer acquisition to our half-hardy herbaceous plants has not been made for some time than the species of Bell-flower, now figured, supplies. It has all the beauty of the favourite *C. pyramidalis*, and is even more showy, on account of the larger foliage and the greater dimensions of its flowers. It is peculiar, too, for a property which *C. pyramidalis* hardly possesses, and which renders the present plant singularly valuable. We refer to its capacity of blooming abundantly, in the smallest state, as we have seen numbers of specimens splendidly in bloom in quite small pots, when the height of their flower-stems did not exceed a foot or nine inches.

Of its native country we have no information. It was sent to England from St. Petersburgh, with the name here adopted, and has blossomed in the garden of the Horticultural Society, and in the Epsom, Tooting, and other nurseries. Our drawing was taken from Messrs. Rollisson's, Tooting, in August last. The habit of the plant is particularly strong and robust, and the flowers appear in a long terminal spike, like those of *C. pyramidalis.* They are usually two inches and a half across, and sometimes as much as three inches.

It may either be cultivated in a pot, and kept through the winter, like *C. pyramidalis*, in a cold frame, to be turned out against a wall with a southerly aspect in spring; or it may be constantly grown in a pot, and made to decorate the greenhouse, or the windows of a drawing-room, or the recesses in the front of a mansion, or the balustrades outside its windows. If increased in the spring, by offsets or cuttings, plants of almost any required size may be obtained for autumn flowering, according to the strength of the cuttings, and they may be made use of, the same year, for any desired purpose. Perhaps the best way of treating the species is to keep it always in a pot, because its blossoms and foliage will then have a delicacy of appearance and tint which much enhances their interest. We by no means, however, recommend this practice exclusively.

Any cold frame will suffice to preserve the plants during winter. Indeed, they would probably endure our climate without any protection ; but it is safer to afford them a trifling shelter. The engraving represents, on a much-diminished scale, the whole specimen, of which our coloured figure is merely the summit.



GARDENING AS A SCIENCE.

No. II.—TEMPERATURE.

So much has been written upon the temperature, by day and night, of stoves, vineries, and other structures devoted to the purposes of general "forcing," that it might appear superfluous to devote another line to the subject; nevertheless, as heretofore it has involved a series of contradictions, we hope that a review of some important facts, with a few relative observations, may be interesting.

The radiation of heat from the surfaces of flues and hot-water pipes, is a problem to which many arithmeticians have devoted their attention. A clever paper by Mr. Tredgold, on "The relations of heat, moisture, and evaporation," might be cited; and it appeared in the first volume of *Loudon's Gardener's Magazine*, p. 37. But the inquiry is so hampered with contingencies, that few amateurs could render it available: to them it will in most respects be sufficient to observe minutely the maximum of heating power which the apparatus at command can produce, and the degree of limitation within which, with the least possible trouble, it can be controlled. If any species of machinery, aided by accurate glazing and adaptation of the sashes, can be made to raise a temperature of 65° at eleven o'clock of a frosty night, and, by the mere banking-up of the fire, to retain that heat within 5 degrees (60°) till eight of the following morning, there will be ample cause for satisfaction. Economy of fuel must, however, be consulted; for so much depends upon the action of the furnace, that one shall rapidly consume double the quantity required by another, without any adequate result.

Whenever hot water is preferred, and can be introduced, we earnestly recommend the gardener to avail himself of the flue. A chimney of some sort must be erected; and many content themselves with a simple, upright shaft, conducted through the roof of an exterior shed; but why this waste of radiating power, when a few extra shillings would carry a flue from one end of a house to the other, and thus husband the heat of the ignited fuel? Any brick flue can be rendered impervious to smoke if the mason be master of his art, and coat the inner surfaces of the bricks with well-wrought parget. Security is of the greatest consequence, and that can be obtained by a good flue without prejudice to vegetation. We write advisedly, for in a handsome conservatory not remote from us, the water of all the pipes was frozen throughout by the sudden accession of very severe frost; and before the ice could be dissolved, or the water put in motion, many hundred plants were utterly destroyed: the flue from the furnace, had it passed through the house, would have radiated heat sufficient to defend those half-hardy tenants of the conservatory, which, however, could not survive the decomposing agency of 7 degrees of actual frost during a period of twenty-two hours.

We quit the general consideration of flues, water-pipes, and furnaces, by observing that a short time since, a very clever person made mention of a new and cheap boiler, which consists of two small copper cylinders, one within the other, the exterior vessel containing the water, the inner cylinder the fuel, (coke or charcoal,) which thus, being in contact with every inch of the former, produces the full effect, equably and speedily. As we have not inspected the machinery, we can only allude to it as an improvement upon a previously-announced discovery, whereby any person can possess himself of a hot-water apparatus for a mere trifle, and " maintain it for twenty-four hours in action at the expense of two-pence!" If this be true, the invention is worthy of support; but our own experience of fire-work may serve to render it (and any other contrivance) more economical by the use of Moira coal—both large and small; no material, that we are aware of, is, in fact, so appropriate: it consumes entirely to a white ash, rarely clinkers, and never deserts the fireman. If Newcastle or Bath coal cost two-pence per night, an observant and adroit person will effect the same operations for three-halfpence, by the use of the Moira! Mention has been already made of this new combustible, but we re-urge its use from the conviction of its value, which every day's experience tends to confirm.

Solar light, though it produce intense yet ever-varying degrees of heat within a glazed erection, is not in any degree similar to the heat radiated from a flue in the hours of darkness. The conviction of this truth has led to very opposing conclusions. Some, and the greater number, of routine gardeners, advocate the necessity of maintaining high temperature by night, in order to obviate the danger of arresting the growth of their plants by what they term a check; but others, men of inquiring minds, who take a philosophical view of the phenomena of nature, have argued that a high temperature during darkness is at variance with the natural laws, and can in no instance be justified by correct analogy. The late President of the Horticultural Society, Mr. Knight, may be regarded as the leading authority in this reform of the theory of forcing; and a writer of an article which appeared in col. i. p. 54 of the *Gardener's Chronicle* of January 28th, has detailed some facts confirmatory of that theory.

Taking the Vine as his subject, he states, that his standard of fire heat, 75°, allowing himself a range of 3° above and below that point, had produced "the development of weak, long-jointed wood—fruitful, certainly; the fruit, however, like the wood, being weak, the branches long and straggling, the berries small, and, when ripe, very imperfectly coloured, and in many cases shanking off." A practical friend called, and upon inspecting the vines and the state of the fruit, then changing colour, and hearing from the grower the detail of his practice, adduced a variety of arguments, and suggested the following regulation:—" Begin with a temperature lower than 50°, increase it gradually, and always let it at night sink at least 10° lower than what you consider *necessary* by day." Complete success followed; and " strong, short-jointed wood, and close, compact, finely-coloured branches," resulted in two seasons from attention to the advice given.

Low, night temperature may, we admit, offend some delicate tropical subjects; it may also check a pine-apple plant, which naturally revels in low, vaporous, dark situations, and ought to complete its growth in fifteen months; but as regards many of our most beautiful stove exotics, we know that neither growth nor health need be injured by a night temperature of 50° to 55°; and as to the *Vine*, we have only to recite two circumstances in order to prove to what extensive transitions it may, with impunity, be subjected.

Early in the month of April, in one of those parching, frosty springs, of which so many have occurred since 1834, we were told of a large Vinery under early forcing, that was expected to mature its crop in May. The gardener was well known as a clever and veracious man; and reliance would be placed on his statements. He had been working, as it were, against wind and tide, and also under the stimulus of competition, with a neighbour, who, in a low, close stove, had urged *his* trees by a temperature of 80°. We learned from the former, that he commenced at 60°, had raised his heat by fire, first, to about 65°, then 70° and 75°,—by day and by night.

On the day alluded to, with the fruit in apparently fine condition, the foliage ample, broad and verdant, the first thing that caught our eye was a great number of broken quarries, the air pouring through the apertures in strong currents, upon leaves and clusters indiscriminately. The foreman was appealed to on the subject, and his attention called to the apparent risk incurred. He replied—that there might be some danger, but that this was nothing to what had occurred on one cold night a week before; when, by the snapping of a cord, an upper large sash had slided down completely to the ground, the circumstance not being discovered till the men came to work in the following morning. Upon inspection of the Vine, no difference, no discolouration, could be detected in that portion of it which had, perhaps, been exposed for hours. When the gardener himself joined us, we claimed the admission *that if the Grape Vine could sustain a sudden depression of temperature of at least* 40°, the high degree of heat excited by the flue must be useless during the nights! The gardener distinctly asserted *that* 70° *or* 75° *were required* to carry on without check the processes of early forcing; thus hoodwinking his judgment by the prejudice of routine, and closing his eyes against the evidence of positive facts, even at a moment when a cold current of 40° was pouring through more than a dozen apertures in different parts of the roof!

Argument in such cases must be thrown away; but our discerning readers will be alive to proofs so demonstrative; and these we shall corroborate by stating another circumstance more recent, and yet more palpable.

Most persons who observe the weather, will be able to retrace the fearful hurricane of January 26, 1842, which raged with its utmost fury from six to seven o'clock in the evening of that day. At that time our early Vinery exhibited all its clusters: the highest temperature by fire had never exceeded 68°, and that by night fell to 60° and 62°. Just as the storm began to subside, or rather under the influence of the last gust, which sounded like a billow struggling against some powerful impediment, the shaft of the flue-chimney gave way, and some of the bricks falling on the lights, broke a bar, and fifty panes of glass. As the wind lulled, it veered to N.W., the mercury falling to 32°; yet, in total darkness, no remedy but a few loose boards was at hand or could be applied. The heat of the house was reduced 25° ; and as the draught of the furnace was quelled by the loss of the chimney, the fire could barely be made to maintain 50°.

No injury resulted, the blossoms opened in a few days, the clusters drew out favourably, and the grapes ripened in due time.

Thus we have adduced evidence which cannot be objected to, of the great hardihood of the Vine, even under most critical transitions ; and the inference we would draw is this:—That, as the tree and fruit will sustain, and also profit by, a heat of 96° to 100° under the influence of the sun ; and can not only support, but prosper exceedingly, when, at midnight, and before sun-rise, the temperature is reduced to 60° and 62°,—it will be wise to let high temperature by day supply the stimulus, and to consider the night as a period of repose, and not of excitement. The prejudices of routine should be abandoned; and, in lieu of them, an educational system should be persisted in, till the trees obey the slightest impulses.

But while we advocate strong solar, confined heat, we must partially qualify the precept, by remarking that, after the spring equinox, the direct ray might be softened by the intervention of a light screen stretched over the sashes. The thinnest muslin would suffice ; it would diffuse the light throughout the house, would produce every required effect, without leaving the chance of any injury to the swelling berries, from those minute globules in the glass or of water which, under the direct rays, act as lenses and scald the fruit.

We have thus turned our attention to the Vinery chiefly, nevertheless we are persuaded that forcing, and flower-houses in general, would prosper better under a lower temperature, provided the system were commenced with prudence, and conducted progressively, under watchful circumspection.

NEW METHOD OF POTTING PLANTS.

The description we gave in a former Number of the advantages and defects of that system of potting which is now in general use among enlightened cultivators, leads us at once to propound the plan whereby those advantages may be still secured, while the defects can be alike remedied.

We desire to be extremely cautious in ascribing praise to those who do not merit it ; but, as far as we can learn, the outline of the method we are about to detail, was struck out by Mr. Wood, now one of the foremen in Messrs. Henderson's nursery, of Pine-Apple Place. It appears to have occurred to him that, as plants flourished with such amazing vigour when planted out in a bed, and, if judiciously exposed and drained, flowered also in the greatest profusion, it would be a most desirable object to give them the same means of attaining an early and luxuriant maturity in pots ; seeing that, in many places, there is no convenience for having appropriate borders or beds in plant-houses, and, where there is, the specimens cannot be so easily controlled, nor are they at all portable.

Numerous experiments, both casually and designedly made, had shown that, by the common way of potting, no such ends could be brought about ; since plants which were placed in pots very considerably larger than those which they seemed to require, almost invariably suffered, to a greater or less degree, from the stagnation of water in the soil. And as this accumulation evidently formed the chief obstacle to the adoption of large pots for the smallest plants, it was very justly thought that anything which could be employed to drain effectually the entire mass of earth, so that no water could stagnate therein, would give the means of allowing young plants in pots all the benefits which they would derive from being planted in beds.

Following out this notion in a practical manner, small specimens were shifted from what are called sixty-sized pots, to those which were nine inches or a foot in diameter, using a turfy fibrous soil, divested of none of its rougher matters, and mixing with it a quantity of broken sand-stone, in pieces from a quarter to half an inch square. By the united aid of the turfy and vegetable matters in the soil, and the fragments of stone scattered throughout its substance, it was thus kept porous and open, without even a tendency to become hardened, consolidated, saturated, or sour ; and the plants throve in it with the rapidity and health of those which were placed in a border, while, being situated nearer the glass, and more subjected to the agency of air, &c., they began to flower much sooner, and more abundantly.

Since these first investigations were made, the system has been pursued very extensively in the gardens of Mrs. Lawrence, of Ealing Park, where Mr. Goode, the very skilful gardener, has, by its means, produced results of a most astonishing nature. Applied to Heaths and New Holland plants particularly, it has effected wonders. Some species of the former,—which are at all times difficult to cultivate, often fail altogether, and grow with peculiar tardiness,—were transferred, last spring, from the cutting-pots in which they had been struck, immediately to large pots, nine, ten, or more inches across. The issue has been that, in the autumn, the specimens were a foot and upwards in height, and singularly bushy ; for a few that develop lateral shoots with the greatest slowness and scarcity, were largely and liberally furnished with them. Other and freer-growing kinds, had formed, in the same period, and by the like treatment, specimens nearly eighteen inches high, of the most compact and perfect figure, and had twice shown a disposition to flower, which was repressed only that they might bloom better in the present year.

In the case of some New Holland plants, the effects were even more astounding. Beautiful specimens, from one to two feet high, and as dense and spreading as could be desired, as well as in an admirable flowering condition, were obtained in one season. In most instances, their closeness had been produced by repeatedly stopping their shoots; but there were some in which it had naturally arisen, without any artificial aid.

Nor are we stating these facts on the authority of any individual who might be supposed to be interested in giving them an exaggerated colouring. We fully examined their correctness for ourselves; and we do not doubt that many others can bear a similar testimony. The age is, we trust, fast sinking away, when the wonderfulness of a thing is considered a sufficient reason for decrying it. And we would urge those who are seized with amazement by our account, to try the system fairly themselves, when, if they do not arrive at the same conclusions, it will most probably be through a neglect of other important particulars. It would be absurd in us to say that the plan must succeed, wherever it is properly followed; because everything of the sort is, to some extent, dependent on other circumstances. But we feel that we may safely promise, from what we have seen, that, where the attendant conditions are all favourable, the system will assuredly produce again the good consequences we have noticed.

That the importance of the plan may be placed in a strong light, we shall mention the principal benefits it will entail. It brings the plants nearer to a state of Nature, while, at the same time, they have all the appliances which art can give. Much as the implicit reliance on Nature's dictates may be deprecated, since, in artificial circumstances, plants are often made greatly to excel the beauty they reached in the natural ones, there can be no question that, with some classes of exotics, an adherence to the *general* procedure of Nature is decidedly the rational and proper course. This is strictly the case in regard to the plants of which we treat, and which are mainly pure species of dwarf shrubs. With hybrid productions, and straggling species that have to be restrained within certain bounds, somewhat different management is requisite. Still, with low shrubs, it is quite clear that their existence in a soil which does not impede the extension of the roots till they arrive at a given boundary, is in the highest degree favourable to all the purposes of the culturist. They advance more healthily and uninterruptedly; and they are better prepared for fulfilling the ends to which they are destined, viz., the free development of flowers.

In the system we are remarking on, therefore, there is an assimilation to Nature as far as is desirable; and the plants subjected to it thrive, for a time, fully as well as if they were in the most propitious of their native conditions in this respect. Still, there is a possibility, from the too great comparative richness or depth of the earth in which they may be planted, from the want of an adequate amount of light, from a superabundance of moisture, or from other causes, that specimens which have a free range for their roots may be disposed to enlarge themselves more than is necessary, to the retarding of the blooming period, and the prevention of that ripeness of growth which is indispensable to the formation of inflorescence. To avoid this consequence, the plan of which we are writing provides pots of just such a size as shall check the roots of the specimens, when these last are large enough to bear flowers profusely, and thus both throw them into bloom, and retain them always afterwards in a flowering condition. Hence, it combines the more congenial features of both natural and artificial treatment.

By this method, moreover, the excellent modern practice of cultivating exotics in a dwarf well-shaped manner, so that each specimen may present an object of beauty, in form as well as flowers, worthy of individual scrutiny, will be vastly facilitated. When plants, whose branches cover a broader space than the diameter of the pots in which they are put, are brought together into a group, the probability is that, notwithstanding the cultivator's conviction that they ought to be far enough from each other to allow air and light to play round them, and notwithstanding, also, his desire to attend duly to this, they will, through the heedlessness of the attendant, in some other way, become too much crowded. But where the specimen is much smaller than its pot, such a misfortune is hardly possible; for, however closely they may carelessly be placed, there will necessarily be an open space between the branches of contiguous specimens, on account of the largeness of their pots. The existence, too, of a free soil, into which the roots can push equally on all sides, will be almost sure to render the expansion of the branches alike regular, and so bushiness will be attained. The direct action, again, of light and air upon the earth, and consequently upon the roots, will have a strong tendency to mature the shoots of the plant, and fit it for bearing healthy branches, and an abundance of perfect flowers. Where the branches overspread the soil, as in the ordinary method of potting, no such result can be realized, or only very inadequately.

A more obvious and remarkable benefit will, however, flow from the use of this system, in that it will cause the plants to develop themselves so very rapidly. When, as we have seen, a fine plant that, by any other process, would demand a tedious period of years to perfect itself, can be so easily procured in one season,—or two, at the most,—the operations of the culturist will be less troublesome, less expensive, and far more sure and satisfactory. The chances of failure, besides, which are so many, and so prolonged, in ordinary instances, will not only be reduced within a much smaller compass, but be absolutely lessened; as all will concede that the most appropriate mode of management—and we think we have shown this to be such—involves the very slightest liability to mishap.

Another auspicious circumstance in connexion with the plan under review, is, that it affords the best of all facilities for applying the practice we have before so highly applauded, of stopping the growing shoots of the plants in order to make them bushy. So unusual is the quickness of their progress by this plan of potting, that they speedily repair whatever reductions may be made in their branches by forming fresh ones; and by that means the new developments are rendered constantly vigorous, and are ripened almost as fast as they are formed. Every one must perceive, likewise, that where the effect of such a practice is so soon apparent, it can be more easily regulated and modified than where its operation is more tardy.

Perhaps, after all, the most gratifying and valuable result of this system is its bringing the specimens on which it is employed to early maturity. We have lately insisted that no plant can bloom well until it has gained a degree of maturity; and facts demonstrate that there is the subversion of a great principle in permitting species to flower much ere they have reached what we would designate their prime. Potted as we are now suggesting, they would attain this prime at the end of their first or second year's growth, or, in short, whenever their roots had thoroughly filled the pot in which they are planted, always assuming that the size of the pots be adapted to the known habits of the species. After that time, they would be capacitated for flowering, in the richest prodigality, till they grew old and exhausted.

The last advantage which we shall adduce is, that the saving in labour, in time, and in pots, will be immense. As regards labour, if each specimen be removed from the cutting-pot to one which is large enough for it when it has grown to its average natural size, all the trouble of re-potting it so many times, which is occasioned by the current system, will be spared; and in respect to pots, none will be necessary but those in which the cuttings are struck, and such as are fitted for containing large plants. What we mean by the economy of time is, that, as the specimens will be reared so very much sooner, the long period now usually wasted on their cultivation will be saved; and this of course includes a large amount of expense for house-room, for fuel, and for attention.

It would look too much like a superfluity to augur that the plan which comprises such advantages will shortly become common, and that it will produce some considerable changes for the better in the culture of exotics. There are two or three things, however, which are so essential to its success, that we should be wrong in not naming them.

The main point to be observed in potting plants according to this as well as the customary mode, is to drain them thoroughly. To do this properly, it is requisite that a *thick layer* of broken pots or ashes, or some such material, be put in the bottom of the pot, and not merely a few pieces of potsherd. There should be at *least* an inch of drainage, and over all this should be spread a small quantity of dry moss, or a few lumps of very turfy peat or loam, in which all the vegetable matter is dead, but which contains a good deal of woody fibre. Either of these substances will assist the passage of the water, by preventing the fine earth from getting down amongst the drainage and stopping up its interstices; while they will also, by retaining some degree of moisture in themselves, keep the roots cool and damp whenever the earth happens to get excessively dry.

What is of nearly equal consequence, is the texture of the soil. It should by no means be reduced, pulverized, or sifted, any more than as the first of these may be needful. Vegetable fibre, and stones that are not too cumbersome, should be suffered to remain. Where heath-mould is employed, it ought to be full of roots, and be left, to a large extent, in rough irregular lumps, about an inch or so in breadth. There is infinitely too much preparing and manipulation in most composts; and the freedom with which Heaths root into lumps of turfy peat at once shows that they would be more at home if potted entirely into something approaching to the natural texture of the soil in our heatheries or moors. The same *principle* will apply to all soils, and this constitutes a valuable part of the system of potting we describe.

A further part of the plan is to keep the neck of the plant, or that portion of the stem next the roots, rather higher in the pot than the level of the soil. This is often done with Heaths, and is just as useful to other fine-rooted species. It keeps down exuberance, and promotes inflorescence. It saves many a delicate plant from being killed by water; while, by maintaining the vital part in a drier state, it makes them less sensitive to the sudden and casual occurrence of cold in the winter.

But the process most conducive to the bushiness of the plants is the frequent reduction of their young shoots. This must be very rigidly attended to, when they do not of themselves bear a sufficient number of laterals. It may be that the branches will require stopping three or four times in the first season; but this will occupy very little time, and is of such extreme moment, that without it not a few plants would be quite unsightly, whereas, with its aid, they become the most ornamental of our exotic decorations. Where it is rightly practised, it will almost necessarily cause the removal of all the early flowers; but with those plants that do not need to be thus treated, and with others that continue to show their blossoms despite such pruning, it will be highly advisable to take away all the flower-buds as fast as they appear.

As to the application of the system, it embraces all flowering shrubs, whether belonging to the stove or the greenhouse, but more especially those which have not been produced by art. Heaths, *Pimeleas*, *Lechenaultias*, &c., have all been found to be vastly benefited by it. At present, it is not known how long specimens so managed will last, after they have begun to flower. We should presume, however, that they will continue in beauty for three or four or more years, with only a very trifling shift each spring after the second season, and that they may then be discarded, to give place for similar progeny. The beauty of a greenhouse or stove does not consist in having very large or very old specimens, but in keeping plants of a moderate size, that are particularly healthy and lavishly prolific of flowers.

The appearance of this paper at the period when potting is usually transacted will, we trust, induce cultivators to put to the test the plan we have above published. Be the issues of their trial what they may, we have met with enough to render us very sanguine as to the results, when other things are alike genial.

IMPROVEMENTS IN GARDEN-POTS.

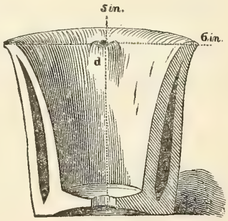
Those who have studied the subject of cultivating exotics are well aware that a very large amount of influence is exerted on plants by the pots in which they are planted, and that such influence may either, by judicious contrivances, be brought to aid the cultivator in the development of his plans, or may altogether frustrate his designs. We therefore devote a chapter to the discussion of one or two modern expedients, and to some suggestions which will make the recently-expounded principles of science bear on the present topic.

One of the questions which have lately been raised regarding pots, and which has caused considerable dispute, is the propriety of having them glazed. It seems to have been assumed that their appearance must be improved by such a process; and the matter of contention is how they affect the health of the plants.

Respecting the aspect of glazed pots, we should have thought there could have been but one opinion. However clumsily the ordinary pots may be finished, and whatever may be the roughness of their surface, these circumstances could readily be altered without glazing; and the most listless observer must at once acknowledge that a dull, instead of a shining surface, is the only appropriate one for garden-pots. To glaze them is to assimilate them to culinary utensils; and we never yet saw a glazed receptacle for plants that was not perfectly abhorrent to refined taste; excepting, perhaps, the large Chinese vases which are used for placing plants in during the summer.

In reference, however, to the health of the plants, experience is most decidedly in favour of the hardest pots. The less porous the material, the less likely is it to become sodden or saturated with water, or to carry off moisture with too great rapidity in the burning heat of summer. Soft thick pots, that are imperfectly baked, are universally discarded by good cultivators, and those which are hardest and thinnest preferred. Pots or tubs of slate are found, likewise, to be excellent receptacles for most plants; and hence, we discern nothing but that which is fitted for proving beneficial to plants in the idea of glazed pots. But, as their hardness and closeness may almost be realized without the glazing, we deprecate their use on account of the appearance.

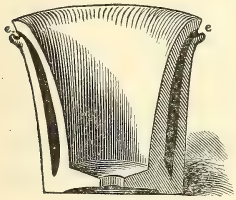
Within the last few months, a new kind of pot has been manufactured by Mr. Brown, of the Kingston pottery, which is a happy modification of the double pot long ago described in our Magazine, and of the plan often pursued in the case of tender plants, of placing one pot within another, and filling the interspace with damp moss, with water, or with wet sand. The design (*see* Fig. 1.) is that of combining two pots in one, so as to have on the exterior the appearance of only one, to be cheaper than two, and yet to have hollow sides,



NO.1.

into which water may be poured at pleasure. The plan will be of great use in the instance of those plants which require a good deal of water in summer, and whose foliage is not low or ample enough to shade the pots from the rays of the sun. Such plants as *Tropæolum tricolorum* and *T. brachyceras* would be particularly benefited by the process; for it is notorious that they often suffer, and perish sooner in the season than they otherwise would, by the exposure of their pots to the sun's agency. Succulent and rapid-growing plants, too, that are half aquatic, as the species of *Mimulus* and *Gloxinia*, *Besleria pulchella*, some *Gesneras*, *Achimenes*, &c., would derive the greatest advantage from the plan. It would also be extremely serviceable to those dwarf plants that thrive best when plunged, but which could not conveniently be so treated.

But the defect of the plan is that the water which the sides of the pot are to contain has to be supplied at an aperture inside the pot, (see *d* in Fig. 1,) about a quarter of an inch below the edge. It is placed there of course for the sake of concealment, and is objectionable, because it will be next to impossible to keep the soil from falling into the cavity, or water from entering it, at undesirable times, when it is being administered to the plant. We think a far more convenient method, represented in Fig. 2, is that of having the apertures for the admission of water on the outside, as at *e*, *e*, preventing them from being unsightly by making them in the form of two rude and very small handles to the pot. The chance of soil entering would thus entirely be done away with; and water could be introduced or abstracted with far more ease and certainty. Thus modified, the plan would be a really good one, and would unquestionably be duly patronised.



NO. II

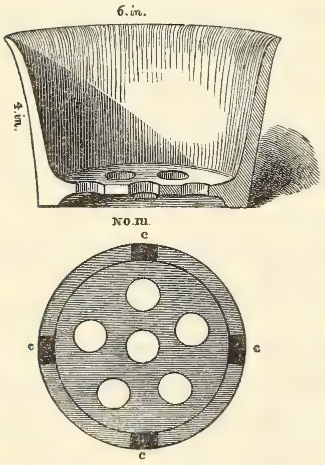
All these slight improvements, however, sink into comparative insignificance before the radical changes we are desirous of seeing effected in the construction of garden-pots, since such changes very materially involve the health and productiveness of all exotics whatever that are grown in this way. Our opinions concerning the improvements that are yet to be made in garden-pots include three particulars, —shallowness, more thorough drainage, and the means of letting air freely penetrate the soil.

That shallow pots are of the utmost importance to flowering plants in promoting their beauty, every day's observation, more and more fully convinces us. No gardener would now think of letting his Vines or his Peach-trees have a border as deep as it is broad, or, in other words, suffer their roots to extend downwards as far as they do horizontally. He would at once anticipate (and justly) a failure in his crops from such a proceeding. And yet the cultivator of exotics takes a course which is quite as unwise, when he puts his plants in pots that have the same depth as diameter. The grand rule in all culture, whether for fruit or flowers, (for the means that will produce the former must bring the latter,) should be to keep the roots near the surface; and this can only be done by positively preventing them from descending, for it must be recollected that all roots have naturally a downward tendency.

In order to accomplish this end with potted plants, there is no other way of proceeding than by making the pots shallower. And in this, we are persuaded, lies the art of flowering plants quickly and well. It will repress straggling and rampant habits, and, with a state of beautiful dwarfness, produce an unusually liberal flowering condition. We are greatly mistaken if the Chinese are not better philosophers than we are on this point; for we believe they plant their curious stunted trees in exceedingly shallow pans of porcelain.

Passing on to drainage, it has for some time been surprising to us that culturists should have been contented so long with having only one aperture in the bottom of their pots. This, from its liability to get stopped, often becomes quite useless, and is never so efficient as it ought to be. Occasionally, we have met with pots having three or five holes for drainage. These, however, are very scarce, and, we fear, by no means increasing. The suggestion we have to make is that six or seven apertures be made, according to the size of the pot, and that thus the possibility of the drainage becoming clogged be almost wholly precluded, while, in an ordinary way, facilities are provided for rendering it extremely complete.

We have another object in view, in addition to that of facilitating drainage, in recommending an increased number of apertures to be made in the pot. It is admitted on all hands that the passage of air through the soil is very efficacious in guarding it from getting sour or saturated, and that it augments the fertility of the plants on whose roots it acts. We therefore propose a greater number of apertures in pots, to admit a larger circulation of air. But lest this should not be obtained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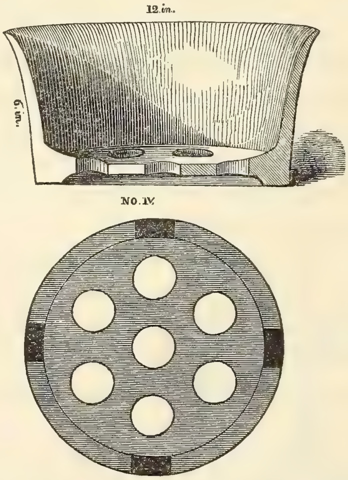

No. IV.

in consequence of the pots standing flatly on the stage upon which they are situated, we would have the pots furnished with four feet, at least an inch long, on which they would be so elevated as to permit a free current of air to enter them beneath, and also to secure the immediate removal of the refuse water from the bottom of the pot.

Figs. 3 and 4 embody our notions on this matter. The first is one third wider than it is deep, or six inches in width by four in depth; the last is half as deep as it is wide, or twelve inches in breadth by six inches deep. The letters *c*, *c*, *c*, *c*, indicate the four feet on which the pot is to rest, and which, in fact, are to form a part of it, while the circular figures in the centre show the apertures. It is needless to add that our engravings are all sections, and that the circular ones which accompany them exhibit the bottom of the pots. The exterior can be made either plain or ornamental as taste may direct.

We hope that some metropolitan potter will take up these ideas, and work them out in the present season. We cannot doubt that, when cultivators see the vast advantages which will accrue from the use of such pots, they will adopt them almost exclusively. Being founded on the most solid principles, they must some day become as common as they now are scarce.

REVIEWS.

The Landscape Gardening and Landscape Architecture of the late Humphrey Repton, Esq., being his entire Works on these Subjects. A New Edition, by J. C. Loudon, Esq., F.L.S., &c. Illustrated by upwards of Two Hundred and Fifty Engravings.

We take blame to ourselves for having delayed so long to notice the above work, for it will be found a most complete and pleasing guide to those who, either for pleasure or profit, feel an interest in the subject on which it treats. Landscape Gardening, as an art of taste, has been little practised on scientific principles, and, indeed, little comprehended or valued, except among the higher classes, until of late years; and although the names of Kent, Gilpin, Brown, Price, &c., have passed in review before the public, it was not until the high-minded and tasteful Repton had exalted the profession into a proper system, that it was appreciated and valued. He neither followed the stiffness of the Italian school on the one hand, nor the freedom of the French on the other; and although he might not be said to have struck out a new line for himself, still he discarded the false principles and retained the good points of his predecessors.

His knowledge of both Architecture and Gardening, being at the same time an artist of the first class, could not fail to place him at the head of his profession; his judgment and learning rendered him a reasoning instead of a methodical artist; and so great was his repute in the art of Landscape Gardening, that princes consulted him on matters of taste, which repute he acquired by his skill in blending beauty with utility.

Here, in one cheap, handsome octavo volume, are compressed all the Gardening works of Mr. Repton, and reprinted under the auspices of the indefatigable Mr. Loudon. It could not have fallen into better hands, when we consider that author's love for and practical knowledge of Landscape Gardening; and this volume he has greatly enriched by his copious notes and judicious annotations. To make an extract from the work would not do justice to the subjects treated on, as they are all connected. It must be seen to be properly appreciated. In short, this work ought to be in the hands of every landed proprietor, as well as landscape gardener and amateur.

The Suburban Horticulturist; or an Attempt to teach the Science and Practice of the Culture and Management of the Kitchen, Fruit, and Forcing Garden. Illustrated by several hundreds of Wood Engravings. By J. C. Loudon, Esq., F.L.S., &c. Smith.

In a thick octavo volume, Mr. Loudon has made a most successful attempt to teach the science of Gardening to the uninitiated; the instructions given respecting the various branches being so clear and intelligible, as to be readily understood even by those totally ignorant of the subjects of which they treat; and in addition to this, everything is illustrated by wood-cuts admirably adapted to convey their exact meaning, particularly the operations of pruning, training, and propagation, which are exceedingly valuable parts of the work, and well worthy the attention of the most experienced.

The volume before us will be found most invaluable to young gardeners, and those who know little of the science of Gardening, and are either desirous of cultivating their gardens personally for health and recreation, or of directing their management upon the most approved principles, with a labourer only. For accomplishing either of these ends, the practical directions are most ample and complete. Suburban Floriculture is to occupy the next volume, to the completion of which we look forward with much interest, being assured, if Mr. Loudon bestows equal pains and care upon that branch as this volume evinces, a vacancy in gardening literature which has been long felt will be supplied.

FLORICULTURAL NOTICES.

NEW OR BEAUTIFUL PLANTS FIGURED IN THE LEADING BOTANICAL PERIODICALS FOR FEBRUARY.

Acrony'chia Cunningha'mi. "A tall, handsome, evergreen shrub, a native of Moreton Bay, New Holland, where it was detected by Mr. Allan Cunningham, and by him introduced to the Royal Gardens at Kew, where it receives the ordinary treatment of greenhouse plants, and blossoms in the months of May and June. The flowers, at first sight, have a good deal the appearance of those of the orange, and the odour bears a still greater resemblance to those much-prized flowers; but it is combined with the aromatic warmth of ginger. The foliage, when bruised, diffuses a very terebinthaceous smell, arising from the numerous pellucid glands with which it abounds. Had it the beautiful and delicious fruit of the orange, it would be equally worthy of cultivation. The fragrant and orange-like flowers will, however, always recommend it as a desirable greenhouse plant." The plant grows about six or seven feet in height, and has copious and good foliage. The blossoms are in cymes of from three to seven each. *Bot. Mag.* 3994.

Agapa'nthus umbella'tus; *var.* maximus. This variety differs from the species only in having larger and somewhat darker blue flowers. Indeed, it may be questionable whether it be not a highly-cultured state of the original plant. It bloomed at Mr. Groom's nursery, Clapham Rise, in September last, and is extremely beautiful. *Bot. Reg.* 7.

Catase'tum pla'niceps. "Notwithstanding our unwillingness," writes Dr. Lindley, "to add to the doubtful species of this strange and changeable genus, we can hardly hesitate about regarding this as new. It is true that its habit is that of *C. maculatum, tridentatum,* and *semiapertum,* from the second of which it differs in its serrated lip, from the first and last in its lip not having the edges incurved, and from all in the singular truncate form of this helmet-shaped organ, which is flattened from front to back, and not laterally. It is a native of the Spanish Main, whence it was imported by Messrs. Loddiges, with whom it flowered in June 1841." The lip appears to be of a dull green hue, edged with orange, and the sepals and petals deep yellow. *Bot. Reg.* 9.

Echi'tes hirsu'ta. "The South American species of *Echites* are numerous," says Sir W. J. Hooker, "little known, and ill-described: yet I have reason to believe that this is correctly referred to *E. hirsuta* of Ruiz and Pavon, and that it is a species widely dispersed throughout South America, and especially frequent in Brazil. Less beautiful, unquestionably, than the *E. splendens,* it is yet a very handsome plant, bearing its delicate yellow and rose-coloured blossoms, of a large size, in the month of September, in the stove of Messrs. Veitch, of Exeter, where alone, we believe, it at present exists in this country. It was sent by their collector, Mr. Lobb, from the Organ Mountains of the Brazils during the preceding year, and is a highly valuable acquisition to our hothouse plants." The leaves are entire, oblong-obovate, acuminate, cordate at the base, downy above, and almost hairy beneath. The flowers are borne in ample racemes. It is a climbing plant. *Bot. Mag.* 3997.

Fu'chsia alpe'stris. "Sent, in August, 1842, from the Glasgow Botanic Garden, by the able curator, Mr. Murray, together with the following from the pen of Mr. Gardner:—This very distinct species of *Fuchsia* I found during my last visit to the Organ Mountains, growing in moist, bushy, rocky places, at an elevation of upwards of five thousand feet above the level of the sea. A plant of it, which I brought home alive with me last year, has been in flower for some time in the Glasgow Botanic Gardens. It differs from *F. integrifolia,* (the *F. radicans* of many,) in having narrower and more acuminated leaves, smaller and paler coloured flowers, besides being nearly all over densely pubescent; in which latter respect it agrees with *F. montana* and *F. pubescens* of St. Hilaire, but they are otherwise very distinct species. From the elevation at which it grows, I have no doubt that it will succeed better in the greenhouse than in the stove." It is a half-climbing species, the branches being sometimes from twelve to eighteen or twenty feet in length. The young leaves have a reddish tint, which is confined to the margins in the older ones; and the calyx is pale crimson, with deep purple petals. *Bot. Mag.* 3999.

OPERATIONS FOR MARCH.

March is universally deemed the month in which seeds of most kinds, but especially those of annuals, should be committed to the earth. The latter require to be differently treated, according as they are hardy or tender, and intended for the decoration of the greenhouse or the flower-borders.

The common way of sowing tender annuals is to make up a slight hotbed, cover it with suitable earth, and, extending over it some protective awning, put in the seeds in rows or drills across it. Another plan, where convenience is possessed, is to sow them thickly in large pots, and plunge them in a hotbed frame, transplanting the seedlings into other pots when they appear above the earth; and this last is the better way with those that are to furnish the greenhouse. But for such as are to be transferred to the open borders in May, it is best to sow them in rather shallow pans, putting only a few good seeds in each, and leaving the seedlings in them till they are fit to be planted out. We recommend this measure, because the majority of annuals are greatly retarded and injured by transplantation; and if they could thus be turned out at once from a pot, they would be spared such a shift. The pots could either be plunged in a hotbed frame, or in some such a gentle hotbed as the seeds are usually sown upon. To guard against failure, the soundness of the seeds can be tested before they are sown, by putting them for some time in lukewarm water, when, if they are good, they will swell, and, when unfurnished with any appendage, ultimately sink. Indeed, it is advisable to defer the sowing of tender annuals a fortnight later than usual, and then immerse the seeds for a day or two in lukewarm water, which will develop them as certainly and as much as if they had been in the ground ; and room will thus be economized in the early part of the season.

For sowing annuals in the open borders, we would suggest that the same means of testing the seed be adopted, and then that it be used far more sparingly than is commonly the case. It is customary to scatter the seed very thickly; and, independently of its wastefulness, such a practice is most injudicious ; for, when springing up in such clusters, the plants can never be thinned properly, and those which are left are invariably enfeebled or damaged. About three times the quantity of seed (never more) than there are plants required should be used ; and if it is put in regularly, the young plants that have to be removed will be fit for transplanting when the thinning takes place.

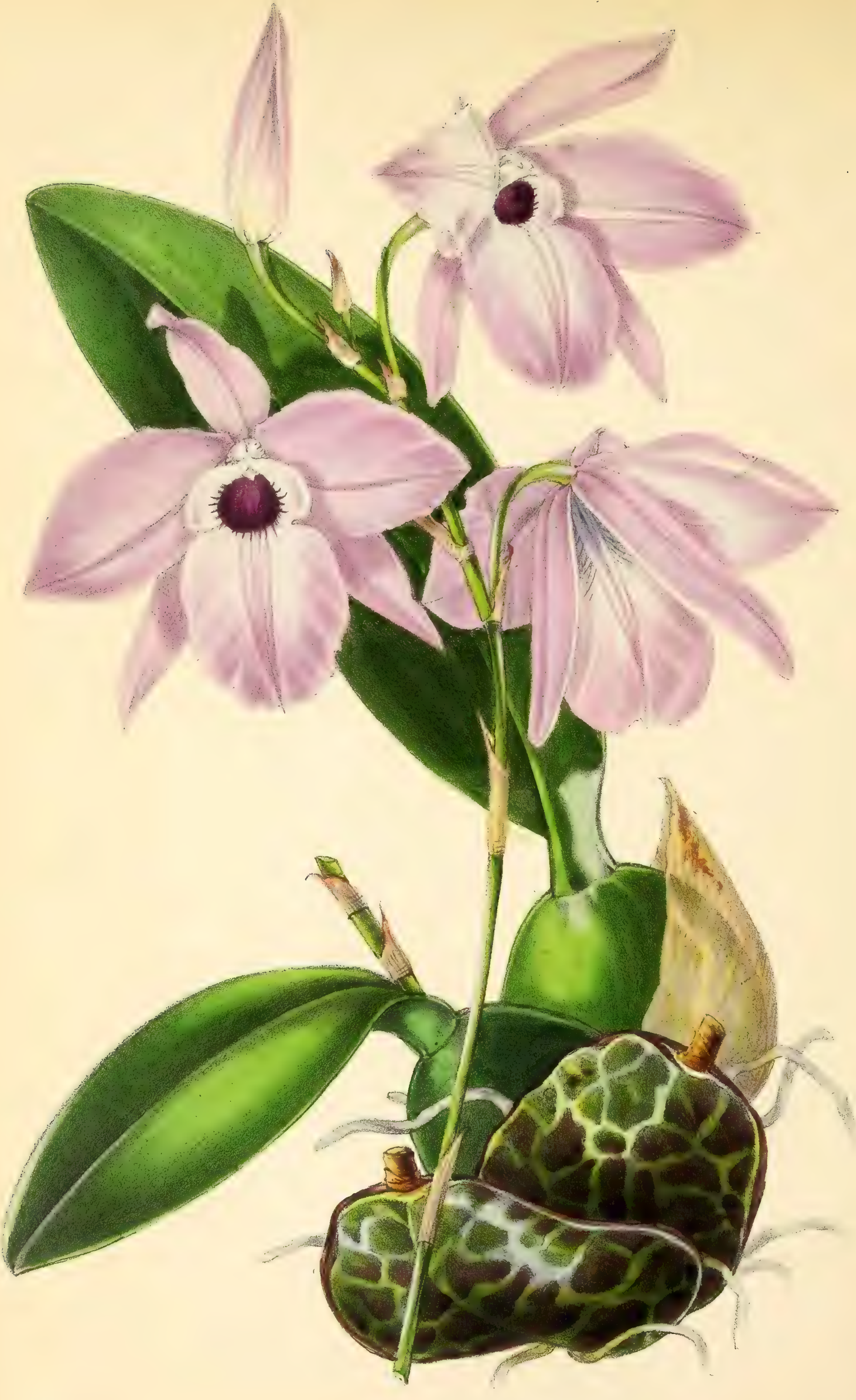
Another evil in sowing hardy annuals is to insert them in the ground without stirring it afresh, or seeing that it is properly lightened. We have often observed people putting in seeds when they have had great difficulty in making the drill for them, so firm has the earth been. Now, wherever a patch of seeds is to be sown, the earth should be loosened with a fork before the seeds are inserted, unless it be already sufficiently light. No annuals can be expected to flourish in a close hard soil.

A general potting will now be requisite among plants in houses. But, as we have often before remarked, no specimen should be repotted till it begins, or is about to begin, growing. There ought to be no such thing as a fixed period for universal potting in well-managed collections. Each specimen ought to be treated according to its individual wants. Yet, where plants of common habits are not now commencing to grow, they may be examined, to see that they are not suffering from disease or improper management. In potting, particular care should be used to distribute the new earth equally throughout the pots, and not leave unoccupied spaces, nor parts in which the earth is pressed too tightly. For this purpose a flat stick should be employed to push down the soil ; and it should be well shaken by striking the pot several times flatly on the potting-bench, before it is rendered firm at the top by the hand.

As the month opens, and exotics make a decided start in their developments, plant-houses may be kept a little warmer and closer, since it is the province of the culturist to assist Nature in her great processes, or to supply the agents which she would have given to the plants in their original state. Warmth and a somewhat close atmosphere are the most congenial to growing plants ; but it is not necessary that such warmth be continued through the night, any further than to exclude frost, for a high night temperature is prejudicial rather than otherwise.

The coverings which are used to shelter exotic shrubs in the open air should not be removed altogether as soon as genial weather appears to set in. Sometimes, during the present and the ensuing month, excessively cold north-east winds occur, which are more hurtful than frost; and it is therefore well to have the protection still at hand, that it may be employed at such periods. Still, when the days are at all mild, everything of the kind should be uncovered as far as practicable. Where stock for filling the flower-garden, too, exists in frames, it should be exposed to air and light whenever the air is warm enough to warrant such a step.

Propagation, both of tender plants for the borders, and of all sorts of exotics, should now be begun. It may be carried on in a frame, to which a little bottom heat is supplied ; and the cuttings should be immediately potted when they have formed roots, and shifted, as soon as they are established, into a colder place, or to their final destination.



S.Holden del. & lith.

Lælia acuminata.

LÆ̀LIA ACUMINÀTA.

(Acuminated-lipped Lælia.)

Class.
YNANDRIA.

Order.
MONANDRIA.

Natural Order.
ORCHIDÀCEÆ.

Generic Character.—*Sepals* lanceolate, equal. *Petals* larger, somewhat dissimilar, fleshy. *Labellum* three-parted, folding over the column. *Column* winged, fleshy, channelled in the front. *Pollen-masses* eight, with four elastic caudiculæ.

Specific Character.—*Plant* epiphytal. *Pseudo-bulbs* ovate, compressed, rugose. *Leaves* solitary, emarginate. *Scape* erect, many-flowered. *Flowers* corymbose. *Bracts* linear, acuminate. *Sepals* linear. *Petals* lanceolate, undulated, acuminated. *Labellum* with the lateral lobes roundish, middle one lanceolate, undulated, acuminate.

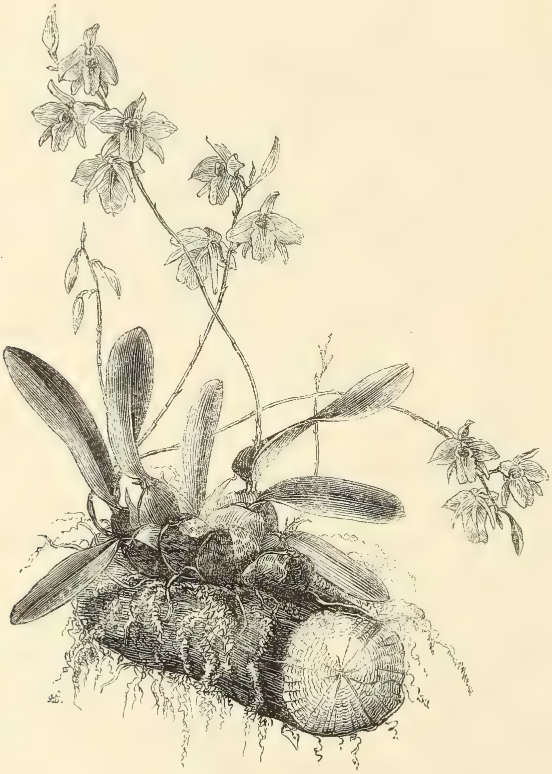
The various species of *Lælia* are, perhaps, among the most interesting of all epiphytal Orchidaceæ to the general cultivator, because they afford such an excellent and characteristic example of the order, by growing best on logs of wood, and also on account of their requiring a less temperature than many others of the tribe, particularly in winter; while the elegant disposition and extreme loveliness of their flowers make them scarcely inferior to any in point of beauty. Many of them have likewise lately been introduced in such considerable numbers, that the ingenious culturist will easily be able to fasten together a quantity of small specimens on one block, so as to produce a large and magnificent mass.

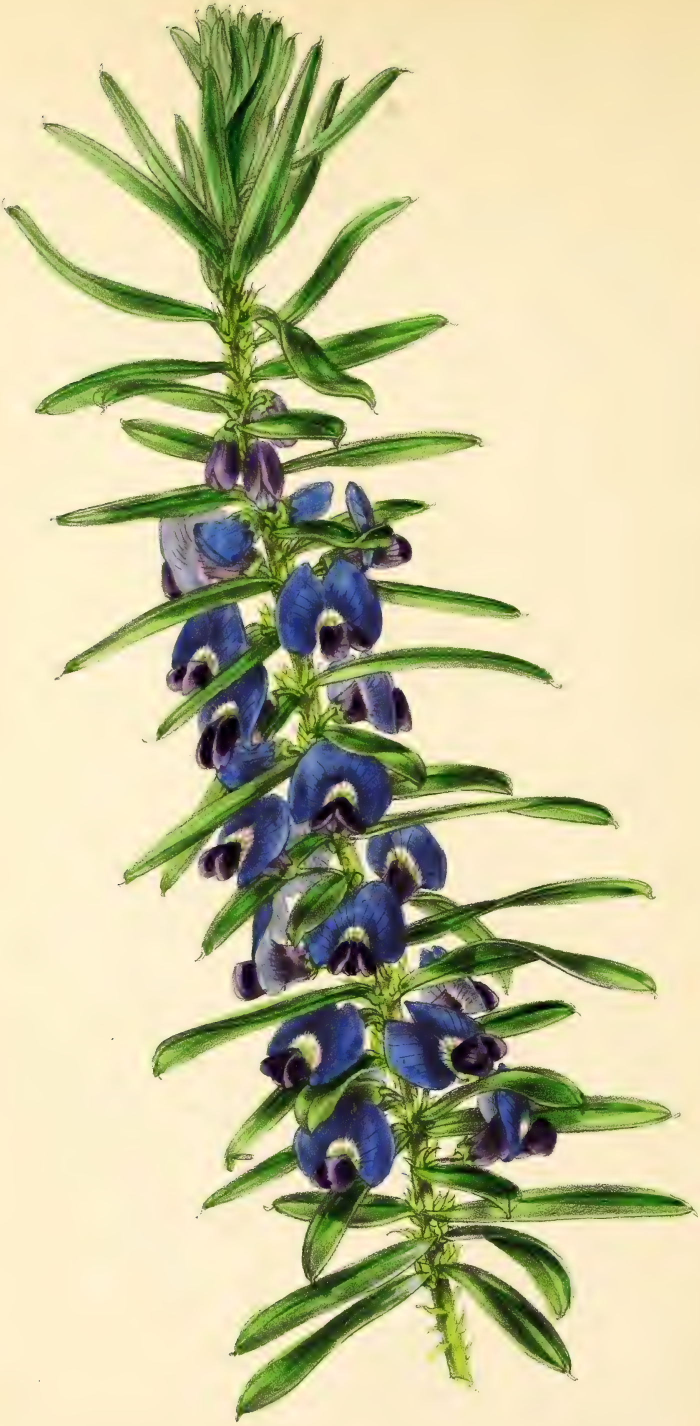
The plant now figured, and which ranks among the most delightful members of the genus, was found by Mr. Hartweg, the very active collector to the Horticultural Society, at a place called Retatulen, in Guatemala. It grows there on the trunk of the Calabash-tree, (*Crescentia cujete*,) on which Orchidaceæ are very frequently met with. It is said to form a fine corymb of eight flowers, and to be so exceedingly beautiful that the Guatemalese give it the name of "Flor de Jesus." Last year, however, it was procured more abundantly by G. U. Skinner, Esq., and sold, among other things, at a public auction in London.

The pseudo-bulbs are produced regularly and alternately, as well as with great closeness, on the rachis, and are readily known by being a good deal flattened and wrinkled. The flowers are borne in an erect scape, and when the plant is weakly, there is seldom more than two or three blossoms on each stalk. But stronger specimens bear several blooms. These are of a very delicate blush tint, with the centre of the lip of a rich brownish purple. The colour of the whole, indeed, seems not much unlike that of *Dendrobium nobile.*

For cultivating the species, nothing is necessary but a suitable rough log of wood to support it; and it can be kept in a warm moist house during spring and summer, but may be taken to a colder one in winter. At no time, however, does it require a high temperature. The blossoms appear to unfold in December or January; at least, it bloomed at that period in the nursery of Mr. Knight, King's Road, Chelsea, where our drawing was prepared.

According to Dr. Lindley, *L. rubescens* is its nearest ally, from which "it differs in its large wrinkled pseudo-bulbs, larger and more corymbose flowers, and in the different form of the labellum."





S Holden del. & Lith

Hovea pungens major.

HÒVEA PÚNGENS; *var.* MÀJOR.

(Pointed-leaved Hovea; large variety.)

Class.
DIADELPHIA.

Order.
DECANDRIA.

Natural Order.
LEGUMINÔSÆ.

Generic Character.—*Calyx* two-lipped; upper lip half-cleft, retuse, lower one three-parted. *Keel* blunt. *Stamens* all connected. *Legume* sessile, rounded, inflated, two-seeded. *Seeds* covered with small protuberances.

Specific Character.—*Plant* shrubby, growing from eighteen inches to two feet high. *Stem* roundish, erect, branching, covered with long brown hairs. *Leaves* linear, pungent, sessile, convolute at the margins, indistinctly reticulated, smooth. *Flowers* solitary, axillary. *Corolla* papilionaceous; wings bright blue, keel purple.

Var. Major.—*Plant* stronger and larger in all its parts.

On account of the showiness of their pretty blue flowers,—which probably attract more universal admiration than those of any other colour,—the species of *Hovea* are commonly favourites, and make a very acceptable feature in the gaiety of the greenhouse throughout the late spring months; more especially as the hues of the several species vary from pale azure to deep purple. *H. Celsii* is, on the whole, we conceive, the most generally grown, since its foliage is larger than that of the majority, though it is a little more straggling.

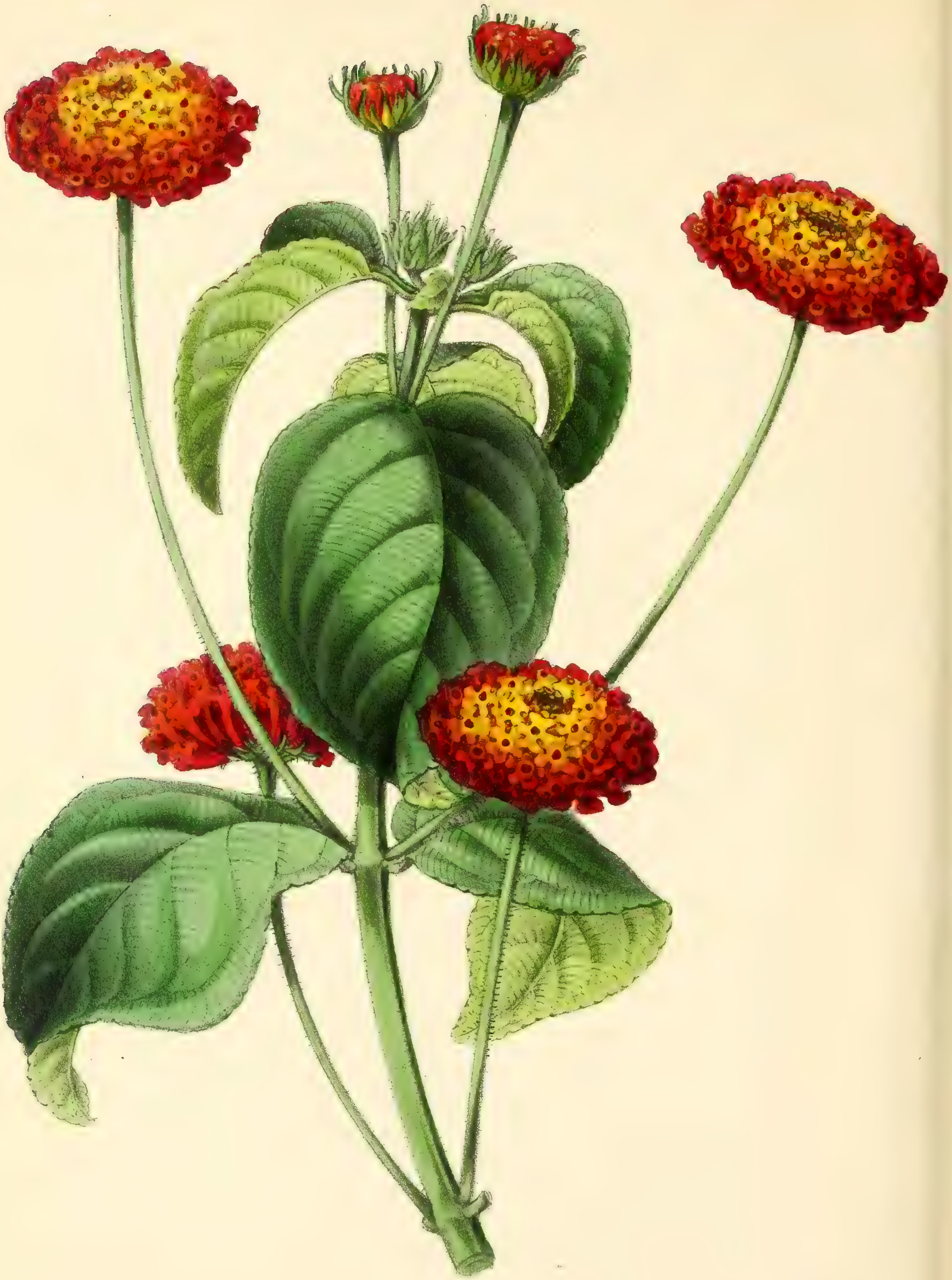
But for brilliancy of tint in its flowers, and for the greatest susceptibility of compactness in habit, *H. pungens*, a species made known to this country only a few years back, and figured in the sixth volume of this magazine, is certainly deserving of pre-eminence. The rich ultramarine colour of its flowers is, in fact, quite inimitable.

Very closely related to the last-named species, and differing from it only in the superior size of its leaves and flowers, and the greater robustness of its growth, is the variety of which we here produce a plate. It was reared by Mr. Low, Nurseryman, of Clapton, from seeds collected in the Swan River Colony, and flowered for the first time at the Clapton Nursery, in May and June, 1841.

When it is thus stated that the plant before us is like *H. pungens*, yet larger and finer, it seems needless to tell any who are familiar with that plant that the present is a particularly handsome object when in flower, and that it merits most extensive culture. A greenhouse shrub, of dwarf character, and possessing such qualities, can hardly fail to be much esteemed.

If potted in the usual mixture of loam, heath-mould, and sand, it will thrive vigorously, and should be kept in a light and airy part of the greenhouse, and potted and watered with care. To render it more bushy than it would naturally be, and prevent it from growing up with a single stem and merely a few side branches, the main shoot should be stopped while young, either in the winter, or while progressing, and the young laterals should be also shortened in an early stage of their advancement. This will make it profuse in the production of branches, which will improve its appearance, and enable it to bear a much greater portion of inflorescence.

There is no difficulty in causing cuttings to root if they be potted in sandy earth, placed in a very slight bottom heat, and partially shaded. The spring is the best time for preparing them.



S. Holden del. & lith.

Lantana crocea.

LANTÀNA CRÒCEA.

(Copper-coloured flowered Lantana.)

Class.
DIDYNAMIA.

Order.
ANGIOSPERMIA.

Natural Order.
VERBENÀCEÆ.

Generic Character.—*Calyx* four-toothed, short. *Corolla* with a four-lobed unequal limb. *Stamens* inserted in the tube. *Stigma* bent, claw-shaped, with the style at the summit as if obliquely adnate. *Drupe* with a nut, two-celled, two-seeded.

Specific Character.—*Plant* an evergreen shrub. *Stems* inclined to be quadrangular when young. *Leaves* opposite, ovate, acute, somewhat recurved, wrinkled and rough. *Corymbs* of flowers axillary, on long erect peduncles. *Corollas* bright-red; yellow in the centre of the clusters.

So similar and apparently ill-defined are some of the species of *Lantana*, that it is not easy to say whether this be indeed the *L. crocea*, brought to England in 1818, or whether it be a new species. We believe, however, that it is really the *L. crocea;* and in this conviction, as well as because it exists in some collections under that name, we publish it as such. At the same time, it resembles the *L. mixta* in several of its characteristics.

We obtained our representation from the nursery of Messrs. Young, Epsom, who raised it from seeds which are supposed to have been received from Mexico. Jamaica is, however, given in the catalogues as the native country of *L. crocea;* but it is quite possible that it may be found in both these places.

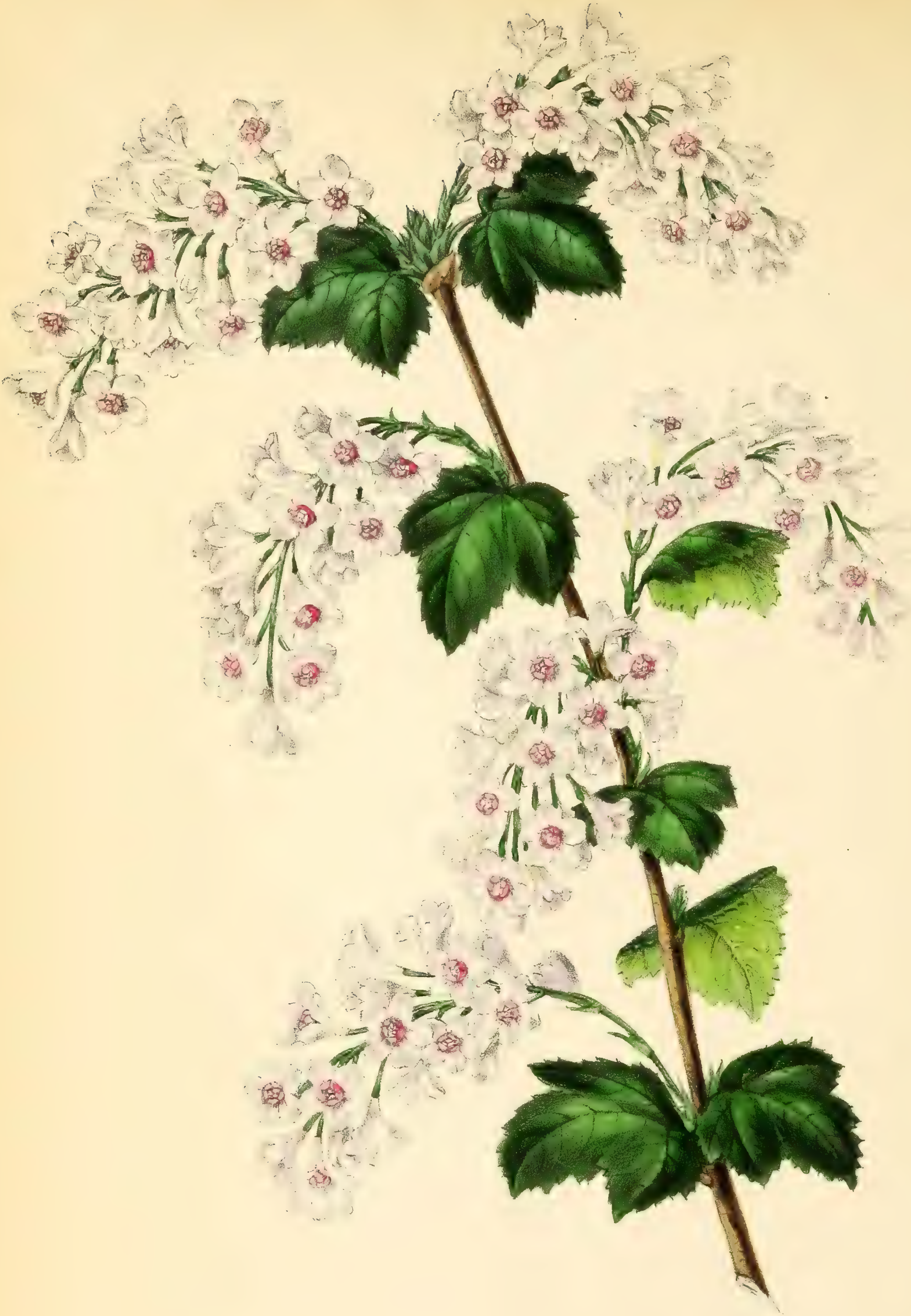
It is a plant of rather robust habits, with no inclination to trail, but growing in an upright position to the height, seemingly, of about eighteen inches. It has deeply-veined yet interesting foliage, and throws up from the axils of its leaves strong clusters of blossoms, which are arranged in corymbs on stout bold peduncles, and are peculiarly showy. Their colour is a deep rich red, while towards the middle of each corymb they become tinged with yellow, and, in the centre itself, are entirely of a vivid yellow tint. They begin to appear about the month of June, and the specimens continue producing them for a long period, according to the place in which they are cultivated.

Hitherto, the species and its allies have been considered to demand the temperature of a stove continually. This would appear to be a mistake; since, as with *L. Selloviana*, experience has shown that *L. crocea* flourishes beautifully in the open border through the summer; and it will probably need no more heat than is furnished to a greenhouse, to preserve it in winter. Plants that were placed out in a border at Messrs. Young's last year, succeeded most perfectly, and bloomed in great abundance.

A knowledge of this fact will, we should think, induce culturists to try the species in a lower temperature than that of a stove, and further, to make use of it in decorating the principal flower-borders, or in filling a bed or two of the flower-garden. Though it attains, in a stove, the height of three or four feet, and rambles a little in habit; when placed out of doors, it acquires a singular dwarfness and robustness, and its elegant parti-coloured blossoms will give it a remarkable suitability for planting in groups.

Cuttings, taken off in the summer, and struck by the aid of bottom-heat, will constitute established plants ere the winter commences; and, we have no doubt, would live without injury in a cool greenhouse.

Lantana is the ancient name of the *Viburnum*, which the species are like in the aspect of their flower-heads.



S Holden. Lith.

Ribes albidum

RÌBES ÁLBIDUM.

(Whitish-flowered Currant.)

Class.
PENTANDRIA.

Order.
MONOGYNIA.

Natural Order.
GROSSULÀCEÆ.

Generic Character.—*Calyx* superior, five-parted, coloured. *Petals* five, inserted in the top of the calyx, and alternate with its lobes. *Stamens* similarly placed, opposite; *anthers* compressed, incumbent. *Germen* simple. *Style* one. *Stigmas* two. *Berry* globose, umbilicate, one-celled, many-seeded, with two opposite receptacles.

Specific Character.—*Plant* a seedling production, like *R. sanguineum*, but with longer racemes of whitish flowers, which have a pink centre.

Ribes sanguineum, or the Red-flowering Currant, is now so thoroughly known to those who either possess gardens, or are in the habit of visiting others in spring, that it were needless to offer any remarks on its merits. As an early blooming shrub, indeed, it is truly invaluable, being laden with its splendid drooping racemes of sanguine blossoms from the present time till the end of May.

Two or three fine varieties of that noble species have been originated within the last few years, and have become almost as common as the older kind. That best recognised has much deeper-coloured flowers than the first sort, and makes a very delightful variation when planted within sight of the lighter-flowered species. Last year, again, as we noticed in our Magazine at the time, a hybrid, generated by Mr. Beaton, now of Shrubland Park, blossomed at Mr. Low's, Clapton, and presented flowers of a pale greenish-white hue, slightly tinged with red. The plant has other distinctive features, which recommend it to notice.

Beyond all comparison, however, the most beautiful thing of this description of which we have heard, is the plant delineated in our figure. This last was very kindly forwarded to us by Messrs. Thomas and William Handasyde, Nurserymen, of Musselburgh, near Edinburgh, who inform us that the plant was obtained from seed in the gardens of Admiral Sir David Milne, G.C.B., at Inveresk, near Musselburgh. Whether it was an accidental seedling or a hybrid, we are not aware.

" The flowers are of a very delicate French white, with a pink eye; while the plant has larger racemes of flowers than *R. sanguineum*, and is a more profuse bloomer. It forms a very pleasing contrast to the deep red flowers of *R. sanguineum*, and is a most desirable acquisition to the shrubbery and flower-garden. It is propagated in the same way as *R. sanguineum*, (by cuttings or slips,) is of the same robust habit of growth, and, like that species, thrives well in almost any sort of soil or situation."

It is only natural to suppose, that a shrub of such a character will speedily be procured and planted wherever *R. sanguineum* exists ; and that it will always be placed sufficiently near that species to exhibit the fine contrast in the colour of their blossoms.

Messrs. Handasyde possessed the original stock of this charming plant ; and we understand they have been sending it out last autumn, and that it can now be had from most of the leading Nurserymen throughout the country.

The generic name *Ribes* was that of an acid plant, mentioned by the Arabian physicians, and which is now known to be *Rheum Ribes.*

GARDENING AS A SCIENCE.

No. III.—EARTHS AND SOILS.

Notwithstanding the labours of the cultivator, and the analysis of the scientific chemist and naturalist, the practical gardener and amateur remain in profound ignorance of the materials they employ. Mention is made, in works of Horticulture, of all the soils employed—loams, peats, sand, and the various species of decomposable manures which are supposed to nourish or stimulate the organs and vital action of plants: but we ask, what does the cultivator really *know* of any one of these substances?

An amateur goes to a nurseryman, purchases a beautiful Heath, Epacris, Camellia, or Azalea; it flourishes during a week or two, then becomes sickly, and never recovers, notwithstanding every usual appliance:—why is this? Again, a Pelargonium of the choicest sort wants re-potting: the soil in which it grew is carefully investigated; its colour, texture, general appearance, closely imitated, and the compost estimated by some successful cultivator, who mentions the usual proportions of decayed turfy loam, sand, and leaves, reduced to black mould. The plant is transferred to a pot a size or two larger, which admits of a layer of the new soil half an inch wide, around, and at bottom of the old ball; the plant languishes and remains sickly, till, in despair, it is perhaps planted out in the open garden, of which no thought of the quality of the staple earth has existed; and there, after the first shower, the foliage acquires firmness and depth of tint, and the plant flourishes luxuriantly till the chills of autumn check its course. These are no exaggerations; examples are of daily occurrence; yet still the mere facts afford us little instruction other than that *the equable state* of moisture, which the open ground maintains except during periods of unwonted drought, supplies and keeps in vigour the fibrils of the young roots, without permitting them to be gorged and diseased by superfluous, impure water, retained, as it frequently is, in pots.

But the opprobrium of gardening is to be found in our actual ignorance of soils, and our utter inability to imitate minutely the quality, either as respects texture or chemical constituency, of those wherein we perceive a plant to thrive.

In elucidation of this dictum, it may be stated, that, during seven years, with every opportunity to investigate the processes, methods, machinery, and soils of the best pine-stoves, every attempt to cultivate the pine-apple failed, either in pit or stove, the quality of the loam procurable in the district being such as to defeat all attempts at amelioration.

Loams vary in almost every locality; the mere term is indefinite beyond belief. The great German chemist, Liebig, has adduced authority, by which it is shown that the *fir-wood* of Norway reduced to ashes contains in every 100 parts :—

Potash	14·1 tenth
Soda	20·7 „
Lime	12·3 „
Magnesia	4·35 „
	51·45

that is, more than one half the weight of the ashes of chemical salts.

Whence could these constituents have been derived ? To this question the only possible answer is, *from the earth !* But the ground in the pine-forests of Norway is not laboured or manured by man, and the trees have grown therein for time immemorial. Sand contains no trace of any of the four salts, and the vegetable matters incorporated with the soil are the actual products of the decayed leaves of the fir-trees themselves : we therefore must refer the salts to the loam, or even clay of the district, and upon this subject Liebig remarks,—

" Arable land is originally formed by the crumbling of rocks and its properties on the nature of their principal component parts. Pure sand and pure limestone form absolutely barren soils ; but argillaceous earths (clays, or *alumina*) form always a part of fertile soils. It is known that the aluminous minerals are the most widely diffused on the surface of the earth ; and all fertile soils, or soils capable of culture, contain alumina as an invariable constituent. There must therefore be something in aluminous earth which enables it to exercise an influence in the life of plants, and to assist in their development. The property on which this depends, is that of its invariably containing potash and soda."

Now, admitting this chemical principle to be correct, the use we would make of it may be explained : Gardening, like Agriculture, will never be understood, nor its phenomena interpreted, until, by analyses, the products of burning be clearly revealed. If, by any well-conducted experiments, it is proved that an alkali—as *soda*, *potash*, or *lime*, exist in the ashes of a plant, that plant will require *loam* as its staple earth ; and as potash is present in loam of every description, as a necessary result of the disintegration of mineral rocks, it is reasonable to ascribe to potash or soda the fertilizing power of loams on those plants which demand an adequate supply of those alkalies.

The rocks which appear to be the grand magazines of alkali are *felspar*,—said to contain above 17 parts in the 100 of potash ; *albite* 11¾ of *soda* ; *zeolite* 13 to 16 of both alkalies together.

This general statement, based as it is upon the authority of several of the most profound analytic chemists, will show, at a glance, how greatly loams must vary in character ; will it then be at all surprising that cultivators must experience disappointment in their attempts to imitate the practice of a neighbour, whose material does not accord with the earth to which he himself can solely have recourse ? But this is not all : one loam, while it contains three times the proportion of salts, may differ essentially from another in the texture or mechanical mixture of the required components—namely, alumina, chalk, oxide of iron, and particularly the *silex* or sand; which, in proportion as it is fine and silky, or coarse and gravelly, constitutes the unctuous, or gritty loam.

When we admit, and which in candour we must, that no one can command the staple soil employed by another in a distant locality, surprise at failures or perplexity must cease; and we can have recourse only to the best and most apt modifier of the discrepancies of loams. This will be generally found in the thinly pared turf of a field or common, not manured by art. Such turf the late Mr. Knight would have used, green, and chopped fine by the spade; but most persons will prefer to let it mellow and decay in a heap during one summer and one winter, during which period it is to be turned and wrought with the spade, twice or thrice. But herein we must guard against a common error. Turf is a substance replete with vegetable matter—a species of manure—the elements into which it is resolvable being carbon, oxygen, and hydrogen—or, in other words, those of woody fibre and of water.

Now, in process of time, this vegetable manure is dispersed into the air; or, if under culture, is taken up by the absorbent power of the growing plants, leaving the base or loam unaltered in any degree, excepting the abstraction of its soluble potash or soda, and a slight portion of chalk.

Loam, therefore, must be viewed as a combination of metallic earths, in a form most efficient and staple for all the purposes of agriculture, and the production of nutritious garden vegetables; it retains these earths consistently, but parts with its *salts:* it also retains manuring substances with a degree of pertinacity varying in conformity to its texture, and the proportion of its alkalies. But as its own base cannot be decomposed by vegetable action, it becomes *poor* (exhausted) by the dispersion or total decomposition of the manure introduced by man.

This assertion must, however, be qualified to a certain extent; because *chalk*, one of the components of loam, is slightly soluble in water itself, and considerably so when it meets with some acids. Chalk is found abundantly in the ashes of many plants, and in those of all timber-trees that we have examined; but no one could detect a trace of it in the sap or juices of a living vegetable. It must therefore be admitted that a portion of it is dissolved, and thus attracted by the plant, in the organs of which it combines with some organic acid, and forms a neutral salt or compound of lime, which the action of fire decomposes, destroying the acid, and leaving the lime in the condition of a carbonate.

As an exemplification—*Tobacco*, cultivated in the garden, (or the Potato plant, which is related to it, botanically,) does not exhibit a trace of chalk; but let it be dried, and burned in an earthenware vessel, and the white ashes will effervesce strongly, if vinegar, lemon-juice, or spirits of salt be poured on them. This hissing will, it is true, partly depend upon the potash, which also exists in the ashes; but the presence of chalk may be ascertained by dropping a small quantity of dissolved salt of tartar into a solution made, by treating the ashes with the acid last named, and previously strained through white blotting paper. The clear liquid will speedily become turbid; and as each drop of potash falls into it, it will there deposit a portion of a substance perfectly white in itself, though often discoloured by some iron, which the acid has also taken up. The white sediment is chalk, (carbonate of lime,)—*i. e.* chalk. So far the subject of earths, — of *loam* in particular, has been noticed generally, because it is our first object to elucidate the cause of those failures and disappointments which amateurs experience in attempting to emulate the practice of experienced gardeners. In the next place, we desire to impress the fact, that loams so vary in their natural components, as to defy imitation; and we therefore caution our experimental readers against the danger of following too strictly the indications of pure chemistry.

When a loam is formed by the natural action of the elements, producing the crumbling to pieces of certain rocks; all the constituents become blended, and interspersed by a process which man, by his puny machinery, cannot imitate; hence the attempt to add ammonia, soda, potash, &c., to loams exhausted or deficient of those saline matters may prove highly injurious. In Nature's laboratory, the process of interblending has been the work of countless ages; man's attempts are the triflings of a few hours—they cannot even be deemed imitations.

We recur then to grass-turf, as our best representative of pure and well-concocted loam, and will close this article, by an allusion to two modes of preparation, which are excellent and feasible; the first method, indeed, now to be described, comes under our ready inspection.

A neighbouring gentleman is a strenuous admirer of a great variety of stove-plants, (none strictly requiring heath-soil,) and he is wonderfully successful, by the use solely of a compost consisting of about three parts grass-turf, two parts stable-dung, and one part sharp, gritty, or river sand. These are thrown together, turned and chopped repeatedly, till they be reduced to a homogeneous fibrous mass, —two or more years old. The soil is not pressed tightly into the pots, but by frequent copious syringings it is daily washed among the roots. This treatment, with a heat of 60° to 70°, produces a most luxuriant vegetation, and the *Cacti*, *Musaceæ* *Orchidaceæ*, *Euphorbiæ*, *Amaryllidaceæ*, thrive surprisingly.

By the following process, turf can be reduced speedily, and in a great degree rendered clear from the larvæ of insects. It is strongly recommended by a nameless writer, in a very able paper upon soils. Collect the turf, chopped to small pieces: lay it on a deep bed of warm stable-manure in a heap, a yard every way; then surround it on all sides with hot dung, sufficient to form a strong hot-bed; and this may be done economically, at the time of constructing that bed for cucumbers or melons. By the time that the crop is off, or even in six weeks, if the heap be made independently of forcing—the grass turf will be reduced, insects destroyed by the heat, and the mould so mellowed and enriched by the vapours of the dung, as to require only the spade to render it fit for use. The surrounding manure is, of course, to be previously removed.

ON DISBUDDING FLOWERING PLANTS.

We have often asserted that, if the process employed in the cultivation of superior fruits, were more largely adopted among flower-growers, a great and immediate improvement, both in the appearance and produce of exotics would be the result. The care bestowed on some kinds of fruit trees, and the skill exhibited in their management, are quite remarkable when contrasted with the indifference manifested to such expedients by the agents of floriculture.

In former papers, we have pointed out two or three things in which the floriculturist would do well to imitate the fruit-grower; and we shall here ask attention to a very simple plan in use by the latter class, which is evidently productive of the happiest consequences, but which has not, as far as we can learn, been much or scarcely at all applied to flowering species.

Every experienced grower of Peach, Apricot, and Nectarine trees, is unquestionably an advocate and a practitioner of the process of disbudding; going over them a little before the present period, or later, according to the earliness of the season, and removing carefully all those pushing buds that would appear to furnish unnecessary branches; or, in fact, such as, if left to perfect themselves, would have to be cut away in winter.

Now the philosophy of this practice is exceedingly obvious. By preventing the tree from developing superfluous shoots, its strength is clearly husbanded, and thrown into those branches which remain; and which are thereby rendered stouter and more robust, as well as better capable of bearing fine fruit and equally vigorous new branches in the succeeding summer.

As we have lately insisted much on the advantage of stopping the young shoots of exotics while in a progressing state, in order to make them additionally bushy, and as, in the case of plants that branch freely when so stopped, we have noticed the principle carried to an extreme; we deem it right here to suggest the means by which such a result may be obviated, and to show the desirableness of limiting the practice, in particular instances. The mode by which we propose accomplishing the reduction of shoots that are, from pruning or other causes, forming too numerously, is by disbudding, in early spring, as is done with Peach trees, &c.

The only plant on which we have ever seen the system adopted,—and that but very sparingly and seldom,—is the common garden Hydrangea. This species is known to bear its rich clusters of flowers on the summits of the young shoots; and when these are desired to be particularly large, all the buds are abstracted from each stem (save one or two of the principal) as soon as they show themselves.

These reserved buds are then encouraged to unfold themselves luxuriantly, by the aid of a mulching of manure on the soil, or by manure water, and thus the noble bunches of bloom met with in exhibitions are obtained. In this example, however, the principle is often carried farther than is requisite for any other plant. One stem alone, from which all the buds are taken but a single strong one, is considered most likely to produce a first-rate show-specimen. Still, for ordinary greenhouse or pleasure-ground objects, a large and healthy plant may be allowed to have many stems, and to each of these two buds may be left for flower.

No one who has observed the effect of this method on the Hydrangea, will, we are sure, be disposed to question its extremely beneficial influence; since the contrast between a specimen judiciously thus treated, and one on which all the buds are suffered to open unchecked, is so strikingly marked as to create the illusion which frequently occurs among the less observant regarding richly-cultivated plants, that the two specimens were distinct varieties, or different species. And the sole discrimination requisite in effecting the process is to adapt the treatment to the strength of the plant, leaving merely as many main shoots and buds on them, as the specimen is calculated to perfect thoroughly.

If, therefore, the plan spoken of be so plainly beneficial in respect to Hydrangeas, it follows that it must be alike useful to every plant partaking of their nature; and, also, in some modified form, to all exotics which, naturally or otherwise, are inclined to bear a profusion of lateral shoots.

There is, then, a very handsome plant now in general cultivation, which approximates so nearly to the Hydrangea in habit, that it cannot but be improved by being similarly disbudded; and this is the *Fuchsia fulgens.* Being deciduous, and the points of its branches withering every year, while the blossoms are borne in large clusters from the extremities of the annual shoots, it has mostly to be pruned down to a low bush each winter; in consequence of which, it sends out an abundance of laterals from the lower part of all the branches. If these laterals are permitted to take their own course, many of them will be too weakly to form flowers for themselves, and will, therefore, greatly enfeeble those which are capable of flowering; while they accomplish no possible good purpose. Should they, again, be pruned off after they have been fully developed, the operation will be almost useless, as they will then have done all the injury they can do. Hence, the only proper way of avoiding their bad effects, is to rub off the superfluous buds when they are first exhibited, as is done with Hydrangeas; and to leave a certain number of the best buds, such as will most nearly accord with the strength of the plant.

When this direction is followed, the plants will not be in the least degree unnecessarily weakened, and each specimen will have six, eight, or more fine stout stems, with proportionately ample racemes of flowers, instead of a quantity of weak infertile branches, and scanty imperfect floral developments. In short, the aspect of the plant in regard to its flowers, will be as much changed, as is that of the Hydrangea.

Nor is the method adapted for application to *F. fulgens* alone. All those beautiful hybrids, of which that species is one of the parents, and which in any measure take after it by bearing their flowers towards the extremity of the branches, may be equally benefited by the same operation; and others, even the common kinds, whose flowers are axillary, might have the size of their blossoms very much increased, and the whole appearance of the plants altered for the better, by attention to them in the end of February, or the beginning of March, divesting them of some of those numberless shoots which they throw out so prodigally. We have tried the plan on *F. globosa*, with the most complete success; and, besides making the whole plant and its inflorescence so much more luxuriant, it gives a control over its growth, which is of the highest use; for a regular and elegant specimen may thus be procured with certainty, whereas it would be quite the subject of chance if altogether untended in this manner.

But there is a much more extensive class to which the process may be applied, including all those plants whose shoots are terminated by clusters of flowers; whether they are naturally prolific in side branches, or have been rendered so by artificial stopping. And it is in this place we must mention, that the habit into which some excellent cultivators have passed of frequently pinching or cutting off the summits of a plant's shoots, to induce bushiness, has led them to disregard a little extravagance, which sometimes results from the practice. We allude to the exuberant quantity of shoots that is occasionally emitted; the very number of which has a direct tendency to enfeeble the flowers; for where there is an immense display of blossoms, these must necessarily be more or less small and imperfect. The preferable course, therefore, we conceive to be, the fostering only a moderate number of shoots, and so allowing the blossoms to be both sufficiently abundant, and singularly fine.

Referring, primarily, to plants which bloom in terminal bunches, we yet take in those whose blossoms are more scattered and solitary. As an illustration of the former class, we shall instance the genus *Pimelea*. By checking the growing branches of some of the species, they are impelled to put forth a considerable abundance of laterals; and when they have once been brought into this peculiarly branching condition, the shoots become so numerous and dense, as materially to lessen both the flower-heads and the individual blossoms. *P. spectabilis*, the noblest of the species, will well illustrate this circumstance. When it is slightly pruned, in the summer, it forms so many young shoots, that unless a few of these be taken away, the clusters of flowers are very much diminished. But, if the buds which would have constituted laterals be judiciously thinned just as they are about to burst, there will be a far more attractive display of splendid bunches of bloom, and the specimen will have altogether a much neater aspect.

The same remarks relate quite as fitly to *Pimelea sylvestris*, *hypericina*, and others of similar habitude. Even *P. decussata*, beautiful as it is when so thoroughly covered with its pink inflorescence, would, we think, be far handsomer if it had fewer and larger heads of bloom. And this might be easily brought about by destroying a portion of the young shoots as soon as they issue from the bud.

Ixoras furnish another very favourable exemplification of the point we are discussing. Those who cultivate them most successfully take care to prune them vigorously, that they may never get larger than mere bushes, and may send out lateral shoots enough to make the production of flowers ample. As a consequence of this pruning, they yearly generate an augmented supply of side shoots, which soon get so numerous that they hinder the leading ones from flowering finely. These, then, we would have examined when the buds were on the point of expanding, and all but those which are intended to flower, with two or three to give an added verdure and compactness to the plant, should be taken off entirely. More magnificent bunches of bloom would thus unquestionably be secured.

Lisianthus Russellianus is another plant which, in certain states, requires to be disbudded. After having bloomed once, or been accidentally broken down, if deterred from seeding, it will send out a quantity of young laterals, which, unless thinned immediately on their appearance, will not more than half or a third of them bloom, and the rest will be very seriously impoverished. But should some of the buds, which are least promising, or are in positions where they can well be spared, be removed at first, the plant will grow and flower with unwonted energy and richness.

After all, the cases we have selected are merely illustrative of a system which may comprise a vast multitude of plants of all classes, whatever may be the mode in which their inflorescence is arranged. This system is, for the most part, necessary only where some kind of pruning is pursued; and it is for that pruning that we seek to substitute it wherever practicable, because it saves some little time, and a very large amount of the plant's strength and beauty. Pelargoniums, many kinds of climbers, and all plants which, through culture, grow too dense, or bear too many branches to flower perfectly, may be most appropriately subjected to it. Indeed, we know of no exotic that is the object of artificial treatment to promote bushiness, which may not, at some period or other, need such assistance.

Beyond its usefulness, however, in reference to those specimens which want their side branches thinning lest they get too weak or crowded, we are anxious specially to exhibit its advantages in regard to such as it is wished to make more bushy. Practised on the terminal buds of young plants, it would have all the effect of stopping their shoots, while, at the same time, it spared them the needless expansion of those shoots. There are many plants grown in greenhouses and stoves, which, like those in the open air, finish their summer's enlargement by forming a bud at the end of their stems or branches. And those which do not grow thus, fold up their leaves into a sort of half-expanded bud. In either instance, the bud or point could be plucked out carefully directly the sap was set in motion in the spring; or the heart of the young shoot could be abstracted as soon as the bud began to develop. This, though a novel, would certainly be a valuable application of the principle; since, by its means, the time and energy wasted on the elongation of the shoot before it would generally be stopped, might in this way be entirely saved. The plan is, moreover, superior to winter pruning, in that the stopping of a soft-growing shoot is at once a means of eliciting laterals, while the process of development is much more tardy when an old, hard, and dormant branch is severed.

There is still another group of plants, on which the system may be practised serviceably, and that is such tuberous-rooted, herbaceous species as Gesneras and Dahlias. The number of stems which plants of this character will throw up, is always manifest at the time of potting or planting, or very speedily afterwards. And, duly estimating the capacities of the plants, if just such a quantity of stems be then left as will flower liberally, and the buds or eyes of the rest cut out, fine and healthy specimens will be obtained. With respect to Dahlias, one good stem will always suffice. For Gesneras, three or four may be reserved, as the state of the specimen may determine, and other kinds can be treated accordingly.

Again, in forcing roses, or any shrubs that have been liberally pruned, and which are not destined for show, but simply to supply flowers for bouquets, however closely the shoots may have been cut in, there will sometimes be buds which give early signs of unfolding themselves badly, and which may then indicate that they will form nothing but starved shoots, wholly destitute of flowers. On these, the operation of disbudding can be further employed; for, if they are timely removed, the other flowering shoots will necessarily receive the extra nourishment which they would have expended.

Finally, there are plants which, from their nature, or from fancy, or for particular purposes, or because they display themselves better in that manner, have to be treated as standard shrubs; that is, are prepared with more or less tall, bare stems, and a bushy, upright, expansive, or drooping head. To train the stems of these nicely often requires much and repeated pruning. But we wish to apply to them the more rapid and suitable process of disbudding. Let the buds be removed ere they have lengthened into branches, and the plants will sooner attain the desired altitude, as well as acquire a greater degree of robustness.

To put in practice the plan we have been suggesting, we would recommend the use of a very sharp, small knife, instead of the hand. If buds be rubbed off by the finger or thumb, the operation is frequently ineffectual, and the bark of the plant is commonly injured. When it is done with a suitable knife, however, the entire substance of the bud can be cut off, without at all damaging the shrub or root from which it is taken.

We hope we have herein said enough to demonstrate the superiority of disbudding to pruning; and that, whenever the former can be effected, it will, in future, be the ordinary method pursued with all exotic plants.

METHOD OF BLOOMING BRUGMANSIA SUAVEOLENS WHILE SMALL.

There is a section of plants which, though somewhat limited in numbers, rank among the most magnificent objects in the vegetable kingdom, but which appear to be too large to admit into greenhouses of moderate size, and only seem fit for the most extensive conservatories. In collections, therefore, where such spacious erections are wanting—and these include the great majority of places—but more particularly in small gardens where only one or two greenhouses are possessed, and every inch of room is valuable, those noble plants cannot be favourably cultivated, and the proprietor has to forego the pleasure of having them, or at least, of growing them in anything approaching to perfection.

Brugmansia suaveolens (the old *Datura arborea*) is an illustration in point. It is naturally almost a tree in its character, and, being a most vigorous growing plant, has a prodigious profusion of roots. If cultivated to its ordinary dimensions, it requires an immense pot or tub, a tall house, and ample space for its spreading branches. But it thrives altogether most admirably when planted in a free border, and only pruned a little occasionally, to repress its straggling outer branches. Thus managed, it blooms with amazing prodigality; and certainly, throughout the long time that it remains in flower, is scarcely equalled by anything in nature.

But comparatively few can command facilities of this description, and the rapidity with which it grows, the size it attains, and the amazing freedom with which it roots, seem to present insuperable obstacles to its cultivation in a small greenhouse ; so that the admirer of fine flowers, who has merely a little room to spare, could hardly hope to compass so splendid an object without some particular method of throwing it early into blossom were devised. It is this method, then, that we now propose propounding ; and all will perceive that, through its medium, the plant of which we are writing can be readily grown and bloomed in the most circumscribed greenhouse. As, moreover, the flowers will be expanded in the autumn, (during the months of October and November,) it will be increasingly valuable on account of the general dearth of conspicuous blossoms at that period.

Cuttings of the species are rooted in the autumnal months, or very early in the spring, by being planted in pots or a bed of light loamy soil, which is supplied with a trifling bottom heat. Perhaps, the spring is the better season, on two grounds. First, They will then strike more freely, and have the opening mild weather to establish themselves in ; whereas, in autumn, having just ceased to grow, they would require more stimulation, and be less likely to root favourably, from the deepening dulness of the atmosphere. Secondly, If struck in autumn, they would demand much more room and attention, than if they were left on the old plant.

Selecting, for these reasons, the spring to propagate them in, the cuttings should be prepared about the end of February; and, when they are rooted, they may be potted into a sandy loam. Pots a size larger than those generally used for newly-struck plants will be needful; the species being of such robust habits. A little shade will then be of service till they are firmly fixed in the new soil, and they may henceforth be kept in the greenhouse or a pit, near the glass.

When they begin to grow, they will advance rapidly; and, as soon as the pots are filled with roots, the plants can be gradually or at once shifted into pots a foot or fourteen inches in diameter. If an immediate shift, without any gradations, be preferred, the soil should be of a very turfy nature, and have a good portion of broken stone mingled with it, to promote drainage, while it must likewise be watered with care. Any loamy earth, well filled with fibrous vegetable matter, (the latter in a decayed, not fresh state,) and mixed with a small quantity of leaf-mould, will be appropriate. The plant is one that commonly demands a very liberal administration of water while it is growing; though this must of course be regulated by the weather and by appearances.

At the time the roots, on examination, are found to have thoroughly gained the sides of the pots, they will have matted the entire mass of soil into a firm ball; and the specimen should forthwith be taken out of the pot. Standing it erectly on the potting-bench, the ball, including the roots, should be nicely pared off all round to the breadth of from two to three inches, with a strong, sharp knife; and the specimen should then be replaced in the same pot, filling up the vacant space with new soil. Probably, the same process will have to be gone through once again, when the fresh earth is refilled with roots; and after that, the plant being now from eighteen inches to two feet or a little more in height, will flower most abundantly. By keeping one or two specimens through the winter for a supply of cuttings, a stock of young blooming plants, for the greenhouse or the drawing-room, may thus be maintained.

We have witnessed the successful operation of the above system in a large metropolitan establishment, and have no doubt that the plan may be as propitiously followed on many other handsome plants of a like nature.

FLORICULTURAL NOTICES.

NEW OR BEAUTIFUL PLANTS FIGURED IN THE LEADING BOTANICAL PERIODICALS FOR FEBRUARY AND MARCH.

Androsa'ce lanugino'sa. Writing of this plant, Sir W. J. Hooker remarks, "Seeds of this charming Alpine plant were communicated to our kind friend J. T. Mackay, Esq., from the Himalayan Mountains, by Dr. Royle, and they flowered in the open air in the Dublin Botanic Garden in August, 1842, when the plants promised to be hardy. The flowers are of a delicate rose-colour, with a yellow eye, while the foliage and branches and young portions of the stem are densely clothed with long silky hairs. Dr. Royle speaks of it as growing about Choon. Dr. Goven found it on the Sirmore Mountains; and R. Blinkworth at Kamoon, where the variety also grows." The species grows five or six inches high, with slightly procumbent stems, and terminal umbels of small flowers. *Bot. Mag.* 4005.

BE'CIUM BI'COLOR. Related to the genus *Ocymum*, and being a half-hardy shrub, which was raised from some Abyssinian seeds sent to the Horticultural Society from Paris. It has "downy stems, ovate-lanceolate, serrated, slightly petiolated leaves, and verticillasters of beautiful flowers arranged in short spikes. The calyx has a broad upper lip, like that of an *Ocymum;* the lower lip is deep, truncate, bordered with a close fringe of white hairs, and terminated in front by a pair of feeble teeth. The corolla is large, white, with lilac veins, and nearly an inch long." It seems a pretty plant, and, "coming from a warmer climate than many other kinds which we commonly find in greenhouses, it will not bear such a great degree of cold in winter. It will flower freely in the autumn and winter in a temperature of from 40° to 45°, and is adapted for conservatories which are kept about this temperature. When potted in any light common soil, it grows freely, and is very easily multiplied by cuttings." *Bot. Reg.* 15.

BRA'SSIA WRA'YÆ. "This new species of *Brassia* was sent to the splendid collection of J. C. Harter, Esq., of Broughton New Hall, near Manchester, by G. U. Skinner, Esq., from Guatemala, in 1840. It has now (October, 1842) flowered for the first time, under the skilful management of Mr. William Ashton, gardener to Mr. Harter. It had been communicated by Mr. Skinner to that and other collections under the name of *Oncidium Wrayæ*, to which genus, previous to its having flowered, it had been supposed to belong; and Mr. Skinner properly preserves the same specific appellation now it is proved to be a new species of *Brassia*." The flowers are of the common yellow and green colour, spotted with dirty brown. *Bot. Mag.* 4003.

BROMHEA'DIA PALU'STRIS. "We owe the possession of a fine flowering specimen of this in Kew Gardens, and from which the drawing was made, to His Grace the Duke of Northumberland. It has flowered likewise with J. D. Llewelyn, Esq., of Penllegar, who received the living plants from Mr. Cuming, with the memorandum, as Dr. Lindley assures us, that they were dug out of a bog in Sumatra:—a strange habitat for a plant of this kind; but which has given rise to the specific name. It was, however, many years ago, detected at Singapore by Mr. Finlayson; and from his imperfect specimens it was, firstly, referred by Dr. Lindley to *Grammatophyllum;* and afterwards, when the structure of the flower was known from living specimens, it was deemed worthy to constitute a new genus. It is a tall-growing, graceful plant, with very delicate flowers." Its habit is like that of a slenderly caulescent *Epidendrum*, and the blossoms present the general appearance of those of *Cattleya* or *Lœlia*. The sepals and petals are white, and the lip is streaked with purple, and is yellow in the centre. *Bot. Mag.* 4001.

DENDRO'BIUM RHO'MBEUM. "This pretty species has much general resemblance to *D. aureum*, from which, however, it differs in having smaller blossoms, a labellum without serratures, and the flowers in short racemes instead of pairs. It is a native of Manilla, whence it was sent by Mr. Cuming to Messrs. Loddiges, with whom it flowered in August last. The imported specimen is less vigorous than it may be expected to become hereafter, in which case the number of flowers will be probably augmented. Here, as in some other cases, the column is furnished near the base with a deflexed horn lodged in a niche just above the insertion of the lip." The stems are pendent, and the flowers are pale-yellow, with a darker lip. *Bot. Reg.* 17.

GESNE'RA DI'SCOLOR. This species is figured in the Botanical Magazine with the name of *G. polyantha*, which is referred to Decandolle's Prodromus. It has been introduced by Messrs. Veitch and Son, Exeter, from the Organ Mountains of Brazil, and exists in their collection. Mr. Gardener describes the leaves as a foot long, exclusive of the petiole, and nine inches broad; and we have witnessed them very nearly this size at the nursery of Messrs. Young, Epsom, where the species was first made known and flowered.

HYPOCALY'MMA ROBU'STUM. "One of those beautiful little Myrtaceous plants peculiar to the south-west of New Holland, which might be easily mistaken for small almond or peach bushes, so much are the flowers like them, and so seldom do we find bright rosy blossoms among the Myrtles. It is a native of the Swan River Colony, and has been raised by Messrs. Lucombe, Pince and Co., of Exeter. The leaves, when bruised, smell very agreeably of lemon. It is a greenhouse plant, and requires to be potted in a compost consisting of loam and heath-mould, with a small portion of silver sand. The pot must be well drained, so as to allow all noxious matter to pass off. Water should be freely given during summer, and plenty of air at all times, except during frost, when the temperature should not be below 35°. It may be propagated by cuttings in the ordinary way." The leaves are small, narrow, and mucronate, while the pretty pink blossoms are axillary, and numerous. *Bot. Reg.* 8.

INDIGO′FERA STACHYOI`DES. "Among the crowd of species now found in the genus *Indigofera*, it is not easy to say whether this is new or not; we believe, however, that it may be so considered, although we are in ignorance of its fruit. Its seeds were collected in Bhotan, one of the independent states in the north-east of India, by W. Griffith, Esq., at the height of 4000 feet above the sea, and sent to Richard Horsman Solly, Esq., by whom they were presented to the Horticultural Society. It flowered in the gardens at Chiswick in September, 1840. It is a handsome, hardy greenhouse shrub, growing readily in a rich open soil, chiefly composed of sandy loam, with a little leaf-mould. It is easily increased by cuttings of the young wood, partially matured at the base, placed in sand, with a little bottom heat. The plant, when in good health, flowers during a greater part of the summer." It has long, pinnate leaves, and tall, erect spikes of pink blossoms. *Bot. Reg.* 14.

LA′THYRUS PUBE′SCENS. "A hardy greenhouse plant, perhaps even able to bear cultivation entirely in the open border. It is grown, we believe, in several collections, and was introduced by Mr. Tweedie from Buenos Ayres; but whether it is found wild near that place, or only in the interior of the Argentine province, does not appear. Mr. Baird gathered it on islands in the Parana. If, as I suspect, it be the same with the *L. acutifolius* of Vogel, it is also found in South Brazil. Dr. Gillies detected the plant about Mendoza; and it extends, we know, as far westward as Concepcion and Valparaiso, on the shores of the Pacific. In general habit it is nearly allied to *L. nervosus*, the flowers being very similar, though the leaves are widely different. Trained in a pot, and placed in a cool greenhouse, it bears its large purplish-blue flowers in May." *Bot. Mag.* 3996.

LI′LIUM TESTA`CEUM. Figured from the nursery of Messrs. Rollisson, Tooting, in June last. "It is said to be a Japanese species, and although very inferior in point of beauty to *L. speciosum*, *Thunbergianum*, and their varieties, it is a plant that well deserves to be cultivated. It is a handsome frame or half-hardy bulb, growing best when planted out in a cold pit, where the bulbs can be kept dry during winter. It should be planted in the pit in autumn, or very early in spring, and when once established should not be afterwards disturbed, for all these plants suffer injury by removal, in consequence of the loss of their tender perennial fibres, and by the bulbs becoming dry. The plant grows from one to four feet high, according to the strength or size of the bulbs, and flowers from July to September, according to the manner in which it is treated." The blossoms are represented of a dull, pale-orange colour, with a few reddish streaks towards the bottom of the petals. *Bot. Reg.* 11.

ONCI′DIUM BICALLO`SUM. "Among the numerous fine things found in Guatemala by Mr. Skinner, there are not many which are more deserving of cultivation than this plant, which has so much the habit of *O. Cavendishianum* as to seem a mere variety of it, although in reality quite a distinct species. It was also met with by Mr. Hartweg. The flowers are fully two inches in diameter, which is four times the size of *O. Cavendishianum;* they appear in a dwarf, erect raceme, not panicle; they are of a rich yellow, with the sepals and petals bordered with cinnamon-colour; the labellum has two very small lateral lobes, and for its crest it has a pair of distinct tubercles, the posterior double, the anterior three-lobed, and the two separated by a considerable space. The flowers are, moreover, slightly exserted, which is not the case with *O. Cavendishianum*." It is cultivated like the rest of the *Oncidia*. *Bot. Reg.* 12.

OXYLO`BIUM CAPITA`TUM. "A greenhouse shrub of some beauty, imported from Swan River by Messrs. Low & Co., of Clapton, with whom it flowered, in October last. It differs in nothing from the wild specimens in our possession, except that the flowers are less numerous in the axils, and therefore do not present an appearance to justify the name of capitate so much as they do." The stems are slightly procumbent at the base, the branches downy towards the summit, the leaves obovately oblong, with a recurved point, and the flowers yellow, with a brownish keel, and somewhat brown behind. *Bot. Reg.* 16.

VRIE`SIA PSITTACI`NA. Previously described under the name of *Tillandsia psittacina.* "Although referred to *Tillandsia*, this has neither a superior ovary, nor the scaleless petals that are essential to that genus. On the contrary, it evidently belongs to Endlicher's section of the order, at present consisting of *Pitcairnia* and *Brocchinia* only. From the former it differs in its revolute, scaled petals, and distinct filaments; from the latter in its distinct sepals, and regular, revolute petals. From both, its large, channelled, coloured bracts distinguish it at first sight. This is an extremely pretty stove plant, for which we are indebted to C. B. Warner, Esq. It is said by Sir W. J. Hooker to be a native of the neighbourhood of Rio Janeiro. In cultivation this requires to be potted in leaf-mould, with a quantity of potsherds for drainage. Plenty of water should be given during the summer months, but sparingly in winter. Or it may be grown suspended in a wire basket, like an orchidaceous plant. It is propagated by suckers. *Bot. Reg.* 19.

NEW OR INTERESTING PLANTS IN FLOWER AT THE PRINCIPAL SUBURBAN NURSERIES.

Bego`nia hydrocotylifo`lia. A pretty addition to the genus, having interesting foliage, which is somewhat variously marked, and hollow in the centre, like that of the common *Hydrocotyle* of our northern moors. The leaves are borne on creeping stems, and are not more than two inches high, while the graceful panicles of delicate pink flowers rise to the height of six or eight inches. It is blooming freely in a stove at Messrs. Young's, Epsom.

Brachyse`ma bractea`ta. This remarkable new species is flowering with Messrs. Henderson, of Pine-apple Place. It has very long lanceolate foliage, a rigid, erect habit, which is apparently shrubby, and not climbing, and deep rich crimson blossoms, which appear in the axils of the leaves. When it comes to be carefully cultivated for a specimen, it will doubtless form a striking object.

Cœlo'gyne crista`ta. One of the loveliest of Orchidaceæ, on account of the truly snowy whiteness of its beautiful flowers. It has pseudo-bulbs of a rather compressedly oblong figure, with a very clear, and scarcely at all furrowed surface. From the base of the younger of these, the racemes of bloom issue, and after ascending a little, curve gracefully downwards. Seven or eight flowers are borne on each raceme, and as they are large and purely white, except a double yellow crest or fringe in the lip, they have an exceedingly attractive appearance. It has just ceased blooming with Messrs. Rollisson, of Tooting, the flowers having been open more than a month.

Donckla`eria diversifo`lia. A very elegant little stove shrub, not more than six or eight inches in height, and branching most profusely. The leaves are small, mostly lanceolate, a little rough on the upper side, and deep pink or crimson below. A plant at Messrs. Young's, Epsom, is most liberally covered with neat, pale, bluish-coloured blossoms, which give it a very interesting aspect.

Ho`vea sple'ndens. Mr. Knight, of the King's Road, Chelsea, has raised this new and extremely beautiful *Hovea* from Swan River seeds. It resembles *H. Celsii* in the richness of its bloom and the size of its foliage, but is apparently less diffuse in its habitude, and has differently-formed leaves, which are of a darker green tint, and are terminated by a long point, instead of being retuse. It is a most delightful acquisition, and has recently flowered in a warm greenhouse at the exotic nursery of the above gentleman.

Ho`vea ——— ? Another new species of Hovea, which has just flowered at Mr. Knight's nursery, in the King's Road, Chelsea. It has very long, linear, or strap-shaped, pointed leaves, and beautiful bright-blue flowers, which are produced in clusters of three, at the axils of the foliage. It is a little like *H. pungens*, but materially different, and with smaller, as well as somewhat lighter-coloured flowers. It promises to be interesting.

Illi'cium religio`sum. We bring forward this species again, because it remains such a length of time in flower, blossoms being, in fact, developed all the winter. And though these are not showy, as their colour is a greenish-yellow, they are numerous, large, and semi-double, which renders them rather pleasing. The species is, besides, a handsome evergreen, flowering when only nine inches or a foot high. It is in bloom at Mr. Knight's, Chelsea, and at Messrs. Young's, Epsom.

Maxilla`ria Steelii. This is both a curious and an ornamental Orchidaceous plant, and is now blossoming at Messrs. Loddiges' Hackney. The leaves are exceedingly long, cylindrical, and drooping, and the flowers issue from the lower part of the stem. These are of a deep cream-colour, richly marked with reddish-brown. The plant is often most erroneously treated, by being planted in a pot, and having its leaves fastened erectly to a stake ; whereas, it should be placed on a log of wood, suspended, and the leaves allowed to hang down naturally. In the latter way alone can it be made to bloom, or even kept alive for any length of time.

MORMO'DES RO'SEO-A'LBA. A strange-looking object, as it flowers when the pseudo-bulbs are entirely devoid of leaves; the flowers themselves being likewise rather wanting in colour. The blossoms are rather small, of a pale whitish hue, slightly tinted with rose, and having a fringe round the lip, which is exceedingly like the whiskers of some of the feline race. Messrs. Loddiges are blooming it at the present time.

ONCI'DIUM BICALLO'SUM. Noticed in a former page of this number, and here adverted to for the purpose of mentioning that Messrs. Loddiges possess a specimen which is flowering abundantly. The flowers are very handsome, but on comparison with those of *O. Cavendishianum*, (which are also expanded at this nursery,) they do not seem so large as they are represented to be. Still, the specimen may be but an imperfect one.

RO'YLEA E'LEGANS. Described in an earlier volume of this magazine under the erroneous name of *Roella elegans*, which was the appellation by which it was then known, and was inadvertently copied into our pages. We now correct the mistake by giving the proper name *Roylea*. It is a very neat and elegant little shrub, flowering at all seasons of the year, and having blossoms of the most vivid cerulean hue. It may be seen at most nurseries.

SIPHOCA'MPYLUS BETULÆFO'LIUS. When this plant was figured by us, it was deemed a stove species, and treated as such by Messrs. Young, of Epsom, from whom we obtained it. It is now, however, found to succeed much better in a warm greenhouse, branching more freely, having a more robust and healthy aspect, and at present becoming thickly studded with its showy inflorescence, which appears likely to make a very gay and brilliant appearance. A close greenhouse, such as suits *S. bicolor*, and one in which the temperature is not raised by fire-heat, but by keeping the sashes closed, while the atmosphere is moderately moist, seems to be altogether most appropriate.

OPERATIONS FOR APRIL.

As vegetation will now be putting on its lively verdant apparel, and many of the flowers will be assuming a gay appearance, the gardener should exert himself to keep everything in the highest possible trim. With this view, the shrubbery and other borders that have been dug over in winter should at once be raked, if they were not so in March; soiled or moss-covered gravel should be turned; and the edgings of lawns pared neatly.

We feel hardly prepared to echo the objections that have been made by many whose opinions demand the greatest respect, to bare edgings for lawns. That they should not be deep or prominent, we are quite ready to affirm. But to the plan of having no edging at all, so that the grass is just on a level with the walk, and in fact, seems to unite with it, however much it may be eulogised, we cannot at all subscribe; for, in such case, the grass can neither be clipped straightly nor neatly; there will be no clear separating line between it and the gravel; and it will always look slovenly, or occasion a deal of extra trouble from the grass that will spring up along the edge of the gravel, on account of the proximity of the turf to the latter. For these reasons, then, we conceive that a low but distinct edging, in which the grass is about an inch above the gravel, is to be preferred.

In operating on the surface of any ground at this, and at all seasons, either for cleaning, raking, sowing seeds, or planting, it is of more importance than the majority of persons are aware of, to avoid trampling the borders when they are at all wet. To tread much on moist earth, is to bind up its surface, and destroy that lightness and porosity which are so essential to the health of vegetation. Great care should be taken, too, in working among shrubs at the present time, as it is so easy to rub off their expanding buds by a very slight touch.

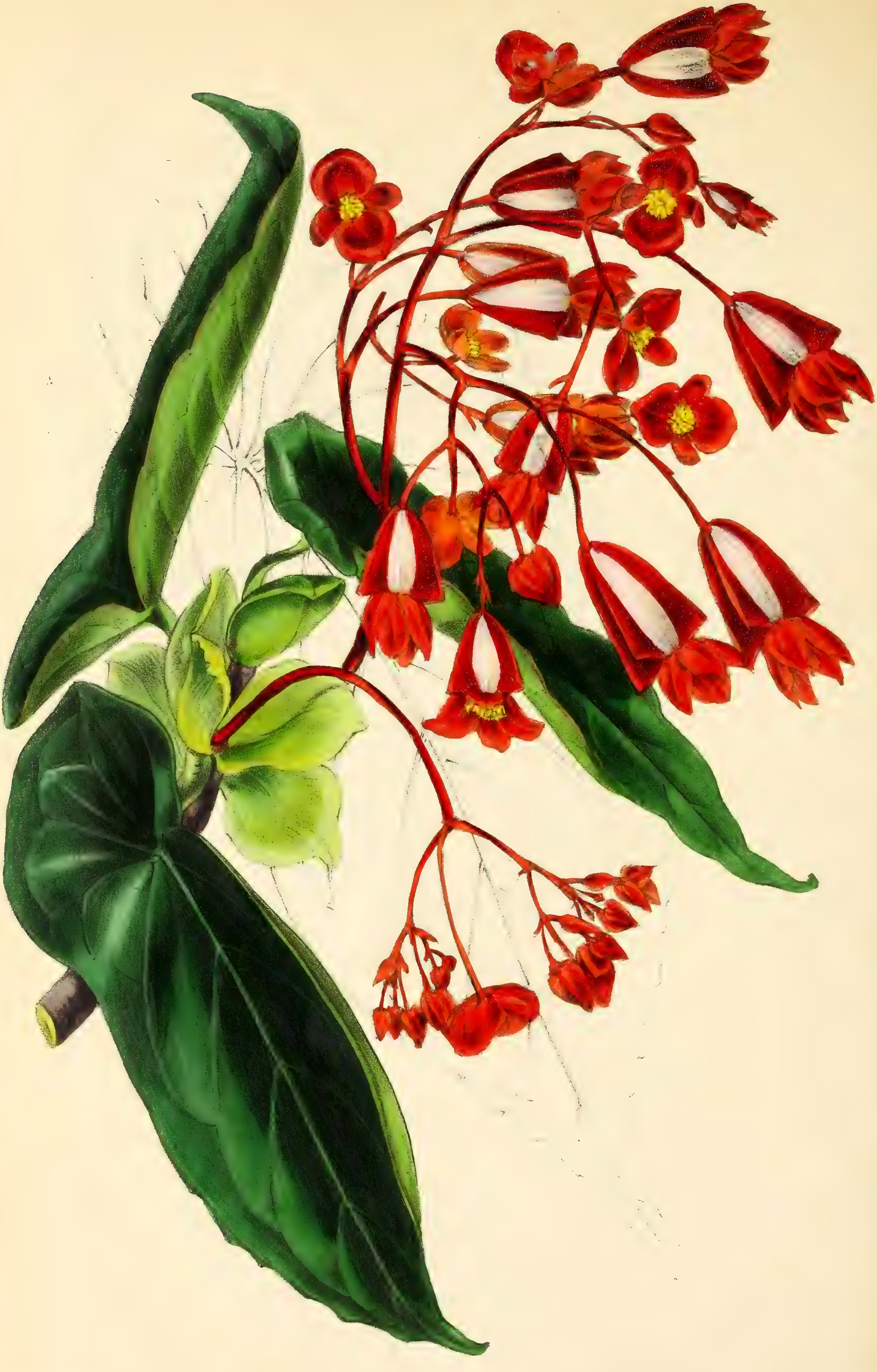
Seeds of annuals, both hardy and tender, should be sown now and about a fortnight hence, for succession. The preceding observations concerning damp soil, apply also, in all their force, to seed-sowing, particularly where it is a bed that has to be sown, and the earth has to be raked. We remember once seeing a person sow some seed of a culinary vegetable in wet weather, raking over the ground after the seed had been deposited. A considerable period elapsed without the plants making their appearance, and at length the ground was lightly stirred with a fork, and raked afresh when it was dry. In a very short time afterwards, the seeds all germinated, and a good crop was gathered. This example is precisely analogous to the sowing of flower-seeds in wet weather, and then either treading or raking them in. The texture of the soil is hardened, air and light are excluded, and the seeds cannot vegetate.

In shrubbery borders that are distant from any principal walk, or are seen from a prominent point that is not very near them, it is advisable to sow the annuals in somewhat larger patches than is usually done. The small circlets commonly made, and which, when the plants are properly thinned, cannot contain more than five or six specimens, are quite lost when they have to be looked at from any far-off position; and even when they are nearer the eye, their effect is not sufficiently decided or striking for borders that have only a few flowers scattered here and there over them. Clumps, of from eighteen inches to two or three feet in diameter, with the colours of the plants composing them well varied and adjusted, would, on the other hand, have a very conspicuous and attractive appearance. We do not mean that there should be more than one sort in each group, but that the colours of contiguous patches, or of a series along a lengthened and exposed border, should be agreeably harmonised.

Much attention is now requisite to the growth of exotics in houses or pits. To suggest, as we have before done, the elevation of the temperature of such structures by confinement or even by artificial means, concurrently with the advancement of the season, may seem absurd to many, but it is strictly philosophical and rational. In raising the heat of plant-houses, however, there must be at least an equal increase of moisture supplied, and this not only to the roots of plants, but in the way of syringing and evaporation. Dry heat is congenial to very few exotics, and the higher the temperature, the greater is the amount of atmospheric humidity necessary. Scarcely any stoves except those for Orchidaceæ, have an adequately moist atmosphere, and the thing is rarely, if ever, thought of in respect of greenhouses. Still, these latter require it as much as the others, in proportion to their heat; and it will be the end of the skilful cultivator to maintain the air of the greenhouse somewhat confined and moist from this time till the middle or end of June. We believe the growths of potted plants would be far more free and rich were this rightly attended to.

Orchidaceæ will now begin to require shading. Gesneras, Gloxinias, and the species of Achimenes must be repotted in a rather enriched loamy soil. Climbers, in the houses, should be retained in due order, and kept constantly and regularly trained in any position that they are desired to fill. If left much longer than a week without being tended, they can seldom be managed neatly.

Vigorous preparations should be made among the half-hardy plants, for the borders and flower-garden. They must be propagated and hardened as fast as possible, and any rambling tendency they may evince should be timely checked. The propagation of all other exotics should also now be carried on most actively, as the young wood is just in the fittest state for forming cuttings which will readily provide themselves with roots, and plants now struck will make excellent little specimens for next year's flowering.



S. Holden del. & Lith.

Begonia coccinea.

BEGÒNIA COCCÍNEA.

(Scarlet-flowered Begonia.)

Class.
MONŒCIA.

Order.
POLYANDRIA.

Natural Order.
BEGONIÀCEÆ.

Generic Character.—*Calyx* wanting. *Corolla* polypetalous, petals commonly four, unequal. Female flowers. *Calyx* wanting. *Corolla* with from four to nine petals, generally unequal. *Styles* three, bifid. *Capsule* triquetrous, winged, three-celled, many-seeded.

Specific Character.—*Plant* an evergreen shrub. *Leaves* oblique, oblong-ovate, acuminate, fleshy, serrated, with a red margin. *Stipules* ample, obovate, concave, coloured, deciduous. *Panicles* nodding. *Flowers* deep red. *Male* ones with four roundish petals, of which two are the smaller. *Females* with from five to six equal ovate petals. *Capsule* pyriform, with three equal wings.

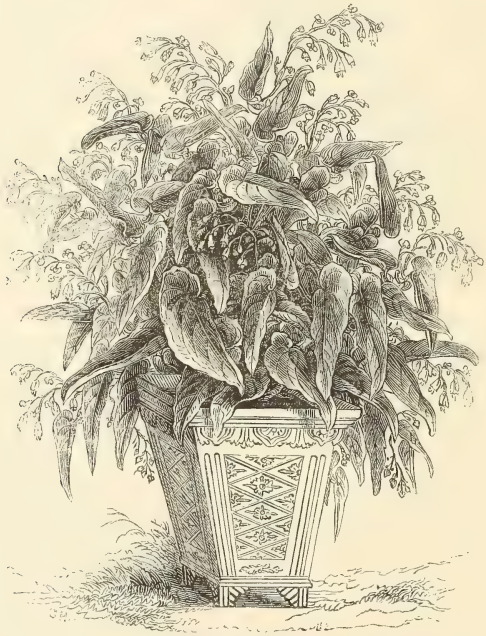
The beautiful genus *Begonia* is remarkable for the curious and interesting form of its leaves, which are often pleasingly marked, or richly coloured on the under side; for the extremely graceful disposition of its flowers, these being usually arranged in a loose spreading panicle; and for the delicate tints of its blossoms, which are generally whitish, more or less tinged with blush, and having a fine cluster of yellow stamens in the middle. Added to these circumstances, there is seldom a month in which the inflorescence of some of the prettier kinds is not developed; and they will consequently be seen to be of great service to the grower of stove-plants.

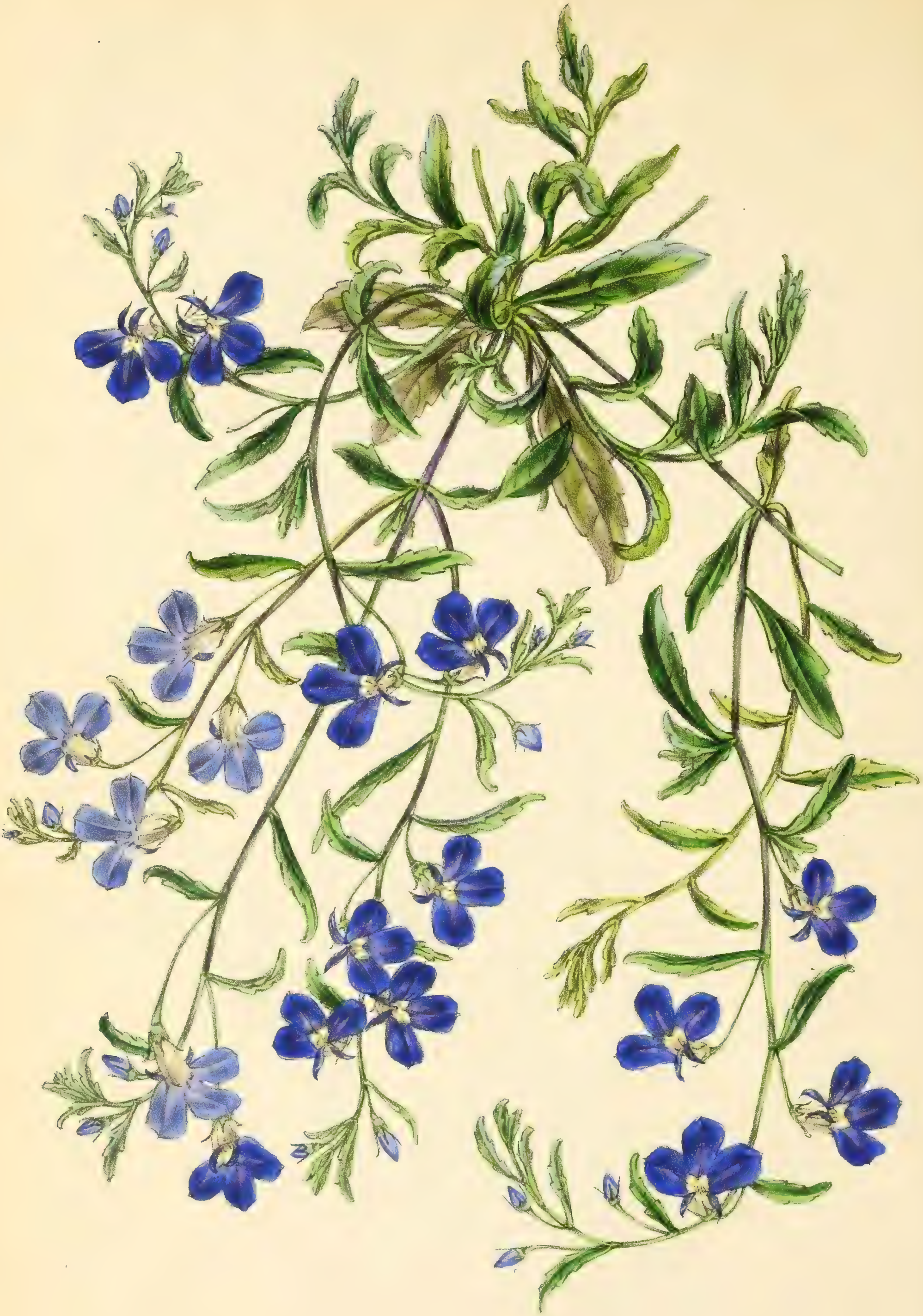
The species now added to our collections, and which is here very well depicted, was imported, with many other handsome things, some of which we have already figured, by Messrs. Veitch and Son, nurserymen, of Exeter, from the Organ Mountains of Brazil, having been brought from thence by these gentlemen's collector, Mr. William Lobb. It bloomed towards the close of last season, for the first time, and has again flowered early in the present year, when the specimen from which our drawing has been made was obligingly communicated. Plants still continue in flower, and will probably blossom throughout the greater part of the year.

It is an exceedingly attractive species, growing about eighteen inches in height, branching liberally, and producing a great quantity of its elegantly nodding panicles of flowers. These, and the large prominent capsules, being of a bright deep red colour, while the space between the projecting angles of the latter is shaded off almost to white, the whole plant is more showy than any other species known to us. A handsome specimen which is flowering superbly at Mrs. Lawrence's, Ealing Park, is one of the finest features in the stove at this period, and yields in interest to scarcely any of our old established favourites.

In propagating the species, common cuttings are employed, and are treated in the ordinary way, requiring some care to keep them from damping off. The plant, like most of the other Begonias, will not bear to be neglected, but must be cultivated, in the literal sense of the word. It should be potted in a rich loam of a light and fibrous nature, mixed with about a third of loose decayed manure, or leaf-mould, and shifted gradually into a moderate-sized pot. If planted in very poor soil, or much cramped at the roots, it will never grow and bloom otherwise than imperfectly. While growing, it demands a large supply of water, though it is essential that the drainage be so good as to admit of this fluid passing off readily.

Below is given a woodcut, portraying the specimen which is flowering so profusely at Mrs. Lawrence's. The vase in which it is shown is one which is manufactured in artificial stone by Mr. G. Falcke, Battersea.





S. Holden del. & Lith.

Lobelia erinus grandiflora.

LOBÉLIA ERÌNUS; *var.* GRANDIFLÒRA.

(Large-flowered Erinus.)

Class.
PENTANDRIA.

Order.
MONOGYNIA.

Natural Order.
LOBELIÀCEÆ.

Generic Character.—*Calyx* five-parted. *Corolla* monopetalous, irregular. *Anthers* cohering. *Capsule* inferior, two or three celled.

Specific Character.—*Plant* an herbaceous perennial. *Stems* filiform, tortuously erect. *Leaves* obovate, toothed, smooth, petiolate. *Flowers* terminal, racemose. *Capsule* two-celled.

Var. Grandiflora.—*Flowers* much larger than in the species.

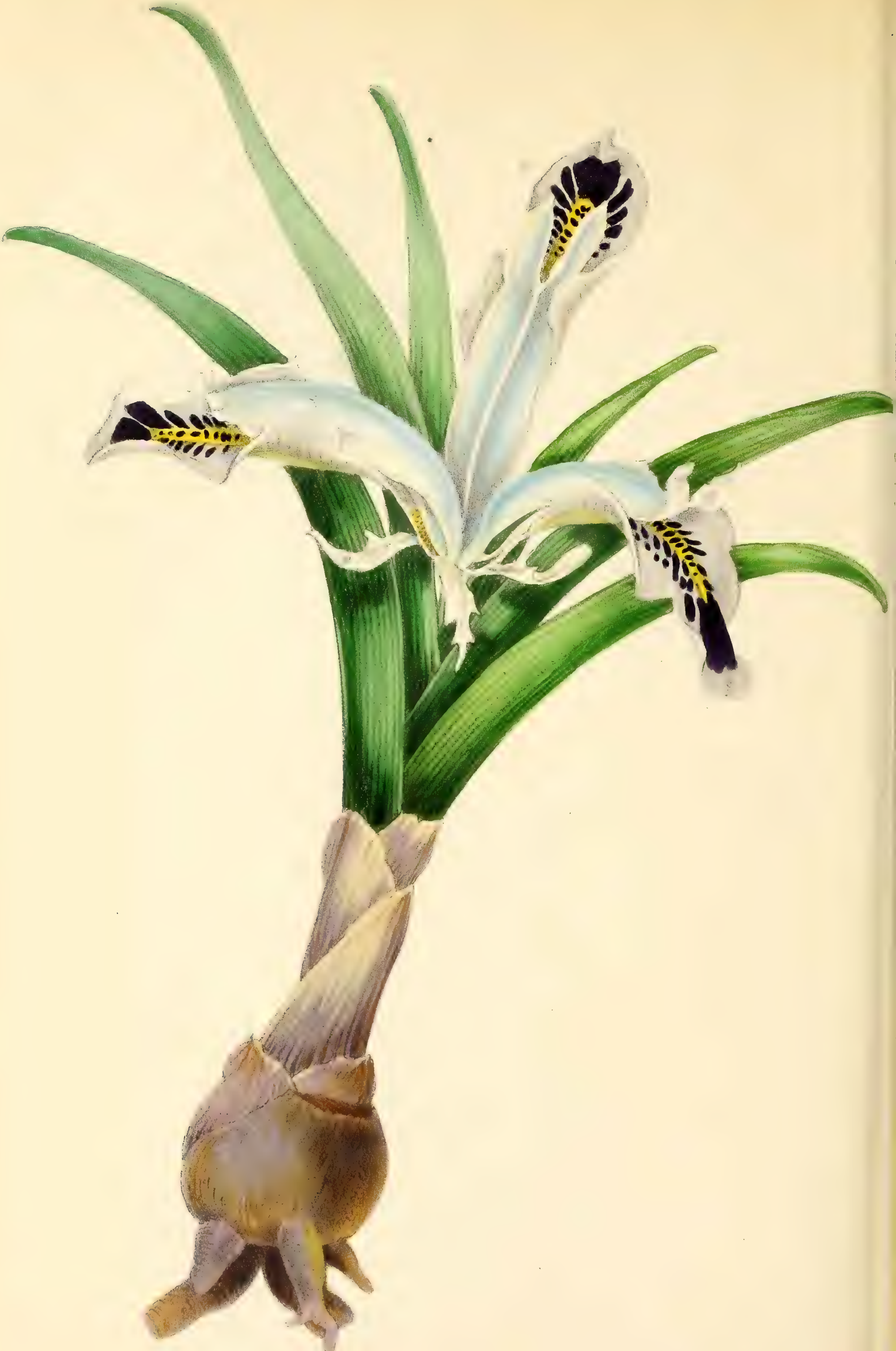
Few persons having either a greenhouse, or a frame, or a plot of ground devoted entirely to flowers, are unacquainted with the charming little *Lobelia Erinus*, whose delightful blue blossoms make the beds of the flower-garden, the smaller vases or baskets introduced to the pleasure-grounds as summer ornaments, the lesser parterres of the conservatory, or the superior and decorated pots or vases employed to enliven the greenhouse, so gay during the warmer months of the year. For all these purposes—for filling boxes to place in balconies, for vases to stand at the top of steps or along balustrades, for elevated stone parterres in the Italian style, or rustic wooden baskets on lawns, for shallow ornamental pots or pans to suspend from the roof, or place on the elevated shelves of greenhouses, and even for putting out in patches in the front of the commoner borders, or for forming an edging by the sides of walks in conservatories—there is hardly a prettier or more interesting object in the whole range of easily-cultivated flowers of a dwarf character.

But the variety now represented, and which we have at present to recommend, is a yet more enchanting little plant, in consequence of its flowers being much larger, and, therefore, more specious, than those of the original species. And on this account, it has a far more brilliant appearance when in blossom.

We met with it, last autumn, in the nursery of Messrs. Henderson, Pine-Apple Place, where it was making a very admirable display in the greenhouse. These gentlemen, we understand, obtained it from Mr. Frazer, nurseryman, of Leyton, Essex, who is believed to have raised it from seed. Whether, however, it is an accidental variation, produced casually or by good culture, or whether the seed was imported from the Cape, which is the native locality of *L. Erinus*, we have not ascertained. The plant is certainly a great improvement on the older and better known sort, and, as such, deserves, from the popularity of the species, to be universally cultivated.

From its low, half-trailing character, it is peculiarly fitted for planting in very small beds, or particularly broad and shallow pots or vases, or for placing round the edges or near the margins of larger plots and borders, especially where they are a little raised, so that it can hang down over their sides. We would, again, more specifically suggest its being used as an edging to conservatory borders that are not too much shaded. The necessity for something of a lively description in such positions, must be strongly apparent to the observantly tasteful, and nothing would be more agreeable or showy than the present plant.

Not knowing its origin, we are not aware whether it can be reproduced by seeds. It may be increased, either by cuttings in autumn or spring, or by partially covering the more trailing shoots with earth in the former season. It is not quite hardy, and must have the protection of a frame in winter, where it can be kept either as large plants for spring propagation, or as young autumn-raised stock.



Iris persica

ÌRIS PÉRSICA.

(Persian Iris.)

Class.
TRIANDRIA.

Order.
MONOGYNIA.

Natural Order.
IRIDÀCEÆ.

Generic Character.—*Corolla* six-parted; petals alternate, reflexed, *Stigmas* petal-shaped.
Specific Character.—*Plant* a bulbous perennial. *Leaves* sheathing at the base, somewhat lanceolate, acuminate, lined, pale green. *Corolla* without a beard, interior petals shortest and most spreading.

Among the many old plants that have most injudiciously been disregarded by modern cultivators, the Persian Iris occupies a conspicuous place. Its merits, indeed, are of so rare an order, that it is really wonderful that so few gardens contain it, and that fewer still grow it to the extent to which its good qualities commend it to regard.

Considering that much of this indifference, like that which is often manifested towards individuals of our own race, may be owing to an undue acquaintance with the nature of this singularly interesting plant, we have passed over its extreme oldness as a matter which ought not to influence us to its prejudice, and have thus had a figure prepared, to illustrate and enforce our statement of its recommendatory traits.

In the first place, those who have been accustomed to cultivate it solely as a forced plant for the greenhouse, or to let it flower naturally in pots, under protection, for the same purpose, seem to be little conscious that it is altogether hardy, and needs no sort of shelter whatever. It blooms every year, at Messrs. Young's, Epsom, whence we obtained our figure, in an exposed plot, which has no sort of shelter; and we have never seen it injured.

It comes into flower, moreover, early in the month of March, when every blossom that will give variety to the appearance of the flower-beds or borders is specially valuable; and it remains in blossom for several weeks, each plant throwing up two, three, or more flowers, in succession, and these individually lasting about a week or ten days.

The flowers, again, besides being beautiful in themselves, their hue being of a delicate French white, with a bluish tinge, and having a large, irregular, violet-purple blotch in each outer petal, which is of a very rich, velvety nature, and is surrounded by a deep orange tint, while the extremities of those petals are finely undulated,—exhale a very powerful fragrance, which is like that of violets, but rather stronger.

Beyond this, however, the species is deserving of notice, as requiring no culture, but simply planting in a loamy soil; and it propagates itself freely by natural offsets.

With such merits, then, we may safely assume that, wherever our Magazine is perused, it will soon become an object of desire and culture. It can be conveniently grown in beds in the flower-garden, in clumps about the pleasure-grounds, round the base of trees or lawns that have a cleared space beneath them, in the borders fronting greenhouses or conservatories, or in any position that is open to the sun, and near a walk that is much used in early spring.

It can still, likewise, be kept in pots, to any extent, both for forcing, and for adorning the greenhouse at its natural period of flowering. When it has been thus used, it should be transferred to the borders as soon as it has ceased to bloom. The bulbs can be taken up in the summer, after the leaves have decayed, and replanted in October or November. Or they may be left constantly in the ground, and be separated every alternate year.

MEDINÍLLA ERYTHROPHÝLLA.

(Reddish-leaved Medinilla.)

Class.
DECANDRIA.

Order.
MONOGYNIA.

Natural Order.
MELASTOMÀCEÆ.

Generic Character.—*Tube of calyx* ovate or obovate, ribless, adhering to the ovary; limb truncate or obsoletely four or five toothed, rarely cleft irregularly, continuous with the tube. *Petals* four or five, ovate or obovate, obtuse or obliquely truncate, rather fleshy. *Stamens* eight to ten, equal, or the alternate ones are smaller; anthers oblong-linear, arched, beaked, and opening by one pore at the apex; the connectives two-lobed or bifid in front, but spur-formed behind, and confluent with the anthers. *Ovary* glabrous at the apex, rarely downy. *Style* subulate, tumid at the base, crowned by a small obtuse stigma. *Berry* ovate-oblong, or ovate-globose, crowned by the limb of the calyx, four or five celled. *Seeds* oval, smoothish.

Specific Character.—*Plant* an evergreen shrub, growing from two to three feet in height. *Leaves* opposite, shortly petiolate, oblong-lanceolate, acuminate. three-nerved. *Cymes* axillary, or on the lower and bare parts of the branches. Flowers regular, deep pink. *Calyx* truncate.

For the introduction of this handsome shrub, our cultivators are indebted to His Grace the Duke of Devonshire, whose collector, Mr. J. Gibson, found it on the Khoseea hills, which constitute a part of the Himalayan range in the East Indies, and brought it to Chatsworth in 1837. It flowered there in the following season, and the specimen then bloomed formed the subject of our plate.

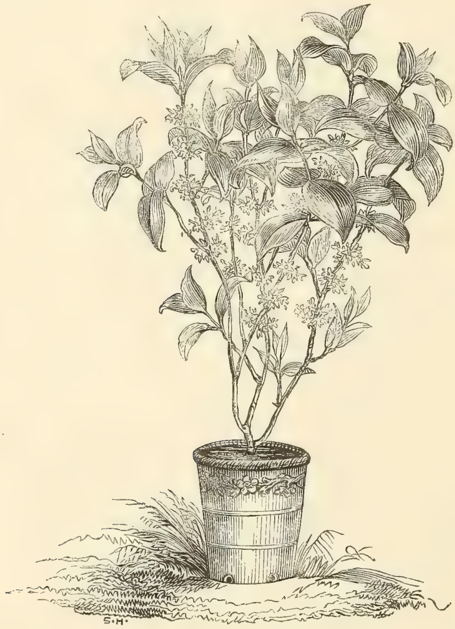
Being a free-growing plant, which is readily multiplied, it has been so distributed since that period, that it is now in most of the principal nurseries, and in many private gardens. Its chief characteristics are an extreme healthiness of aspect, very ample and finely-formed foliage, an abundant production of flowers, a considerable robustness of habit, and a capacity of thriving well either in a greenhouse or stove. The blossoms are borne about the months of June or July, and last a very long time. They appear in clusters on the lower and naked portions of the stem or branches, and are not much unlike that of the Peach, but less spreading or cup-shaped, and with differently arranged stamens, which stand out rather prominently, and have curved filaments. When young, the leaves have a reddish tinge, from which the specific name is derived. Afterwards, they become purely though pale green.

Noticing it in the Miscellaneous matter of the Botanical Register, Dr. Lindley says that " it is apparently very near *M. rubicunda*, a Sumatra plant, with the leaves obtuse at the base. One of the principal features in the genus *Medinilla*, namely, the spur at the back of the anther, is so nearly wanting here, that it only appears in the form of a very small lobe, quite at the base of the anther, opposite the anterior auricles. The species is quite a *Medinilla* in habit."

It is a plant of easy culture, growing freely in a mixture of turfy loam and heath-mould, with some pieces of broken freestone or potsherds interspersed throughout the soil. A large pot seems to be unnecessary for it, as it does not throw out many fibrous roots; drawing a great part of its nourishment from the larger tuber-like callosities which form at the base of the stem. These, in its wild state, become nearly drained of moisture and shrivel up in the dry season; recruiting themselves again during the rains. Cuttings of almost any size will root easily in loam and sand, if covered with a glass.

Although we have remarked that it succeeds in either a greenhouse or a stove heat, it flourishes best when treated as a greenhouse plant throughout the summer, and kept, during winter, in a house with a temperature intermediate between that of the stove and the greenhouse. It should be watered rather profusely in the warmer months.

The woodcut below exhibits the growth of the plant.



GARDENING AS A SCIENCE.

No. IV.

There is no one subject in the science of Horticulture which involves so many difficulties as the method by which plants receive and elaborate nutriment, so as to increase in volume and at the same time deposit within certain vessels or cells the peculiar fluids which characterise, and are specific to each individual.

These are received notions which have been adopted, and appear to satisfy most persons; yet we must admit that the whole process is surrounded with inextricable difficulties, which perhaps may never be removed; but there are a few simple truths that, if duly investigated, will evince that a great deal too much has been incautiously taken for granted.

The term *Sap* is perfectly familiar to every one: it is supposed to be the prime source and origin of all nutriment; that it is prepared, first, in the ground, then passes into, or is attracted by, that most recently formed and porous termination of each fibre of the root, which we are taught to style *Spongiole* or spongelet, and is conveyed thence by some propelling power upwards, to and through every organ of the plant, which it thus supplies with appropriate food.

One truth we admit to exist in this general theory,—it is this; that some fluid or other is taken up by the roots, which is essentially vital to life, and without which, every plant that is attached by roots to the ground must inevitably perish; in proof of this, we have only to appeal to the effects which are traceable from the action of a due supply of rain, or of water given artificially to a vegetable parched with drought. So self-evident are the results, that it would be a waste of time to insist upon their reality; but at this admission we stop, and at this place offer to the consideration of the candid inquirer a few lines from an article by Professor Henslow, which, being written in plain and homely language, are extremely apposite to the present purpose. Writing upon the sap of plants, Mr. Henslow says:—

"The *crude* sap introduced at the roots consists of nearly pure water, containing only a very small and variable per-centage of certain saline, earthy, and gaseous matters in solution. It is a very common opinion, and one upon which most erroneous notions are sometimes built by practical men (gardeners and others), that this crude sap is directly employed in the nourishment and development of the various parts of the plant. There is much plausibility in such an assumption. Every one acquainted with the practice of pruning, is aware that, by cutting away some parts of a plant, he contrives to throw the rising sap into other parts; and he finds that in consequence of such treatment, these latter parts are better nourished, and become more developed than they otherwise would have been; but in spite of so plausible an experiment, the crude sap is not nutritious; we might as well declare that we can receive nourishment from a weak dose of Epsom salts, or grow fat upon soda water. Living bodies, whether vegetable or animal, can only be nourished and developed by organic matter. Now, crude sap may very possibly not contain a single particle of organic matter. The mystery is explained by the fact which Physiological Botany has ascertained, that plants are endowed with the peculiar faculty of preparing organic matter for themselves, out of the materials which the crude sap contains."

Crude sap is generally said to consist of water, holding in solution a quantity of carbonic acid derived from the decomposition of decaying manure or vegetable matter in the soil; but the notion is as crude and ill-digested itself, as thing can possibly be. In fact, we know not what this sap is, or how it can be collected. If we take either the oozings of the vine (the subject best at command), at early spring, when every recently pruned shoot emits at certain recurrent periods of the day, drops of apparently limpid water; or collect the sap of the birch-tree, by boring into its stem; we obtain sap, doubtless, but always more or less blended with the prepared juices of the stem and bark. Assuming however, the droppings of the vine as a type, we find a liquid almost insipid, but which—so far as our test of lime-water can determine—yields no trace of carbonic acid, but gives a very perceptible deposition of lime, by adding a minute particle of oxalic acid to the sap. This acid possesses an affinity for lime, so strong, that a union with it takes place when the proportions of each are very minute, and diffused through a considerable volume of water.

Crude sap, therefore, if it ever be met with pure, cannot be said to contain organised matter; but we may readily admit, that any matter capable of solution in water absorbed by the root, will pass with it into their vessels; and such soluble matters may be common salt, nitre, potassa, or lime,—also that peculiar compound of oxygen and charcoal, which we call *carbonic* acid; but assuredly the most minute particle of any organised solid substance, even though its bulk do not amount to the thousandth part of a grain of dust, can never enter the spongelets of the root.

To recur to Mr. Henslow:—"Not one," he says, "of all the chemists whom the world has yet seen, has been able to combine the elements of inorganic matter, so as to form out of them a single organic compound. They can change one organic body into another, as starch into sugar; but they cannot make either starch or sugar directly from the elements of which they consist. It is to the vegetable kingdom alone that this wonderful faculty belongs, and it is by the leaves of plants that the operation is carried on. The crude sap is merely instrumental in supplying the leaves with the materials necessary for the formation of organic matter; it is the proper juice created by the leaves, and in which such variety of organic matters are dissolved, which forms the real nutritious fluid of the plant, as blood does that of the animal. The importance of retaining all the leaves (whilst they are still living) upon a plant, is sufficiently evident; not one of them can be abstracted or injured without the plant being deprived of a certain amount of 'power' for generating its 'proper juice.'"

The theory of nutrition supposes the faculty of converting the materials of aliment into certain products that shall add to, or enlarge the solid parts, and deposit specific juices in the cells of plants. *Carbonic* acid is always the product of the combustion of charcoal; it is soluble in water, and may be considered the base of woody fibre. It unites greedily with a solution of lime, and deposits chalk: thus, if a person force his breath through a straw into a glass of bright lime-water, the fluid will begin, even from the first bubble, to become turbid or milky, and then gradually deposit chalk, (*carbonate of lime*). *Carbonic* acid is therefore emitted from the lungs of breathing animals; and it is proved that, under certain conditions, plants produce it also.

But have we any reason to suppose that the roots absorb it from the soil? Philosophers assert the fact, but we question the possibility of arriving at the proof. Liebig, among others, states that the leaves inhale the gas, and subsequently elaborate it to the substance of woody fibre. In the absence of demonstrative evidence we advance no theory, nor feel inclined to add credence to any.

As to the development of parts, and their subsequent increase, it appears rational to suppose that the embryo of every plant contains from the first all the rudiments of its future organs; that aliment supplies the principle of growth, not that of creation. We may stagger at the infinite minuteness of parts, but minuteness ought to be no stumbling-block, while we see, and hesitate not to admit, that the smallest seed may protrude a tiny plant, which in a few years will have increased to a million times its original dimensions.

The living principle—that vitality which prevents decay, which repels the effort of chemical agency, is the great mystery upon which every phenomenon depends. We are on this point utterly ignorant; all our researches and most refined investigations lead only to conjecture; and so it is throughout. Natural philosophy is an interesting and beautiful study,—it displays wonder everywhere; but we in vain endeavour to search into causes.

It were wise, therefore, to cease from appealing to Chemistry, as a clue to the processes of assimilation and organic action: Chemistry can only investigate the products of dead or inert matter; and in vegetable structure it teaches that its ultimate elements, as shown by analysis, are four gases,—oxygen, hydrogen, carbonic acid, and nitrogen, and some saline and earthy substances in the form of ashes. Manures, earths, and soils contain the same elements, and therefore we are instructed to apply these substances in order to furnish the rough materials of sustenance; and herein we observe analogy between the vegetable and animal kingdoms. Food must be taken into the systems of both,—or rather, those elements must be supplied which the vital principle can elaborate and assimilate so long as the several functions retain their vigour of health.

The *principle of vitality* remains a profound secret, and we are placed in the dilemma between two opinions—1st, Whether the living plant be to a certain extent endowed with sensation and a power of volition, so as to imbibe at pleasure, according to its necessity, the crude aliment which is appropriate to its temperament; or, 2nd, Whether it be acted upon solely by the external agents, air, water, light; electricity producing and keeping up a sort of galvanic process, which prepares the sap and propels or attracts it into suitable channels.

The mind is lost in the contemplation; and perhaps it would be more wise—certainly more pious—to refer the entire train of vital phenomena to the fiat of Creative Wisdom. It is sufficient for the purposes of Horticultural Science to observe results; and, by studying the products of chemical analysis, to apply those manures or composts to individual plants, which that analysis indicates. Much remains to be learned before the most skilful shall be able to do this to any good purpose; but scientific culture is on the advance.

OBSERVATIONS ON THE NEW SYSTEM OF POTTING PLANTS.*

At no period have the principles of Horticulture been so widely diffused and successfully applied as the present.

Public competition and award have greatly tended to excite a spirit of private emulation, and have given rise to many ingenious experiments, and led to many valuable practical results, in every department of gardening. Whatever may be the balance of merit and demerit, in the immediate and remote influence of horticultural exhibitions, it is certain that to the encouragement they have held out to the practical part of the profession is in a great measure owing the large advancement which has been and is now being made in the various branches of floriculture, whether as it refers to the production of fine plants or blossoms.

It is on the former that the most obvious effects have been produced, seeing that, in attempting to attain to higher excellences in the ultimate objects of cultivation, special attention has to be directed to means of attaining a comparatively greater maturity of growth, in connexion with uniform development of bloom.

That the stated periods for public competition are often unfavourable to the timely production of one class of plants, is too well known to require further notice, and, though inevitable in its consequences, it has not failed in securing a further knowledge of the means of adapting an appropriate treatment to meet such exigencies. But the same cause has also, in conjunction with the desired attainment of superior growth, been attended with other unfavourable effects, in over-stimulating the growth by an excessive application of fertilising agency, subjecting the plants to a higher temperature than was equally favourable to the production of bloom.

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* This paper has been composed, and kindly transmitted to us, by Mr. William Wood, one of the skilful foremen at Messrs. Henderson's Nursery, Pine-apple Place.

Though it is almost universally understood that any course of treatment which tends to cause an excessive development of parts,—or, in other words, an unusual exuberance of growth,—is unfavourable to the formation of bloom, yet there are instances of many splendid exotics, in which, without an immediate application of those principles which involve the requisite treatment for maturing each successive year's growth, the most ardent and persevering cultivator will comparatively fail to realise those results which the objects under his care are, with such principles in view, calculated to produce.

It would appear almost unnecessary to urge a special attention to this point, which must (in theory at least) be familiar to many excellent practitioners; but, up to the present period, it has not been unusual to meet with instances of cultivation, which, for their unusually splendid growth *alone*, have excited admiration and surprise, concerning the means which have been used, and the ability which has produced such magnificent effects, and which are yet very far from being equally interesting, by the presence of that which constitutes the primary object of all cultivation in ornamental flowering plants.

Instances readily occur of plants in every department, which, in consequence of a naturally tardy development of leaf-buds, have caused disappointment by the paucity or total absence of bloom until, probably, the attainment of several years' growth, or some accidental cause, has tended to retard the circulation of sap, or diversify its currents, and thus induce a casual disposition to the formation of flower-buds.

Wistaria sinensis, in the hardy ornamental department; *Kennedya splendens*, in the greenhouse; and *Stephanotis floribundus*, *Mandevilla suaveolens*, *Ipomœa tyrianthina*, and *Thunbergia grandiflora*, in the stove department, are examples in illustration; wherein the natural result of a successful and luxuriant growth is a very partial and uncertain bloom.

As the present test of superior cultivation is that which attains the greatest constitutional vigour within a limited period; and as this test is proved, by repeated instances, to be unfavourable to a uniform development of flower-buds, unless such growth be regulated by principles hereafter to be adverted to, it becomes an inquiry of exceeding interest to ascertain the means by which a certain amount of fertility may be attained in plants which are subjected to an excessive and continuous supply of organic and atmospheric stimulants, whether planted out in greenhouse, conservatory, or stove, in pits, or in pots, admitting of an extended growth by their proportionately large size.

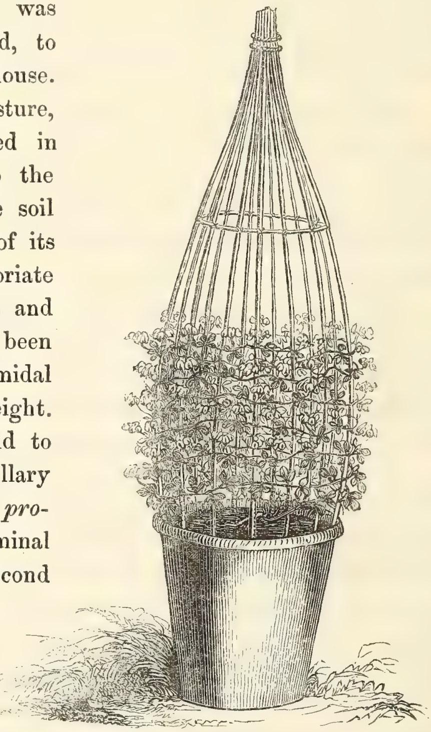
It is in illustration of the foregoing remarks that the following principles of horticulture are brought forward, with a view to prove that it is only by their application that such a proportionate maturity of growth can be attained as is essential to a uniform development of bloom.

1st. All flower-buds, being analogous to leaf-buds, it follows as a corollary, that every flower with its pedunclet and bractlet is a metamorphosed branch.

2nd. "Whatever are the laws of the arrangement of branches, with respect to each other, the same will be the laws of the arrangement of flowers with respect to each other."*

In adducing the evidence in favour of the principles now stated, it will be seen that the formation of flower-buds necessarily depends, as a general rule, upon the presence of developed leaf-buds or axillary branches, and that the same laws which operate in the production of the one, necessarily act in the production of the other.

In corroboration of these truths, a practical instance is here given, which will clearly illustrate the analogy that exists between the primary formation of a leaf-bud or axillary branch, and its ultimate transformation into bloom.



The engraving represents a plant of *Zichya coccinea* (formerly *Kennedya*), which, in the month of July, 1841, was transferred from a 60-sized pot to one of a large 16—being a heavy shift or removal at that advanced season. The plant was subjected, with others similarly treated, to the temperature of an intermediate house. To preserve a regular circulation of moisture, a promiscuous middle drainage was used in the process of potting, in addition to the ordinary mode, and the texture of the soil was rendered more open by the disuse of its close or binding portion. With appropriate attention, its growth was very luxuriant and rapid, and would, had its fore-shoots been encouraged, have extended over a pyramidal trellis of two feet six inches in height. Finding the circulation of sap too rapid to permit the formation of leaf-buds by axillary growth, recourse was had, during its *progressive* growth, to pinching off the terminal leaf-buds or fore shoots, above each second and third joint, which caused an equal distribution of lateral or side branches. In thus obtaining an accumulated vigour, by aiding the development of leaf-buds, which ultimately became matured axillary shoots, the season's growth was necessarily limited, covering the circular trellis to about twelve inches from the base upwards. The practice of removing the terminal growth at stated distances was adopted apart from any recognition, or even knowledge, of those principles of horticulture to which it was ultimately referred; and in the following spring of 1842, the plant presented a beautiful and interesting instance of their application, in the uniform development of nearly 500 clusters of flower. Had the specimen been encouraged to continue its accumulating vigour throughout the season of 1842, it might ultimately have formed a still more striking example ; but, in the present result, proved most satisfactorily the possibility of attaining a perfect formation of bloom from a partial extent of growth.

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* Principles of Botany, 287, 288.

There are perhaps no plants in present cultivation, to which the treatment here adverted to is more necessarily applicable than to *Stephanotis floribundus* and *Mandevilla suaveolens,* two of the most desirable of exotic climbers, each being remarkable for their slow and rare development of leaf-buds, owing to a constitutionally free and exuberant habit of growth; and the inevitable result, in these and all similar instances, when allowed to extend themselves without having recourse to the occasional operation of removing the fore shoots, and thereby aiding the development of side branches, is an attenuated and useless length of growth, which, when it has attained its ultimate vigour, seldom produces more than a few scattered bunches of flowers from the extremities.

The rules from which the foregoing remarks are derived, or on which they are founded, may be stated as follows :—

1st. As the *secreted matter* (peculiar to all plants) in conjunction with an accumulated sap, is essential to the primary formation of flower-buds, and as this secreted matter is in strict proportion to the quantity of leaves,* it may be inferred that an equal formation of leaf-buds is essential to a uniform development of bloom.

2nd. In accordance with a previously stated principle, "that the laws which operate in the arrangement of branches, act simultaneously with respect to the arrangement of flowers," it may be inferred that a system of cultivation which is the most favourable to the production of branches (or axillary growth) will be found the most conducive to a liberal development of blossoms.

3rd. As an excessive vigour is (as a general rule) unfavourable to the formation of flower-buds, in preventing an *accumulation* of sap, it may be inferred that the most perfect system of cultivation will be that which is best calculated to attain a regular development of bloom from any proportionate extent of matured growth.

It appears from the evidence of general practice, that those principles upon which the successful cultivation as regards the growth of plants depends, are generally better understood than those which relate to the means of attaining a uniform development of bloom ; a fact which is not surprising, from the consideration, that the causes of the former are such as may be successfully applied apart from a knowledge of those reciprocal as well as counteractive influences which operate (independently of mechanical means) upon the organs of plants, under every modification of treatment or situation to which they are subjected. But a reason still more obvious remains to be assigned for this difference—namely, that the agencies which lead to a higher and ultimate effect in the attainment of exuberant growth, are invariably found to exert, through the same medium, an opposing tendency upon the predisposing causes of fertility.

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* First Principles of Horticulture, 141.

It is, however, in proportion to the attainment of a system of cultivation which embodies a *progressive* and accumulated maturity of growth, that an equally progressive step can be made towards the ultimate object of all ornamental cultivation-bloom.

The present modes of culture are, more than at any previous period, combining the investigations of science with the deductions of practice, though time-rooted prejudices have hitherto proved obstacles to the gaining a knowledge of first principles, and to their application to the existing forms and habits of professional experience.

In testimony of the approximation of the present age to a comparatively perfect system of cultivation, there is perhaps no instance of higher interest than the one which involves a mode of culture, which has for its ultimate object a *constitutional maturity of growth*, by dispensing with the attendant risk, and *restrictive* influence of intermediate shifts from smaller to larger pots.

The principle upon which such a course of practice is founded is now being successfully applied by the most eminent cultivators, and the same principle, so easily adapted to the stronger-rooting division of ornamental plants, has also been rendered applicable to those *the most difficult to rear.*

It is well known that growers of plants for public competition have often urged the difficulties and disadvantages attending the purchase of plants, which may have received a treatment in some respects opposite to that which they are wishful to adopt; and in many instances they have considered it essential to the accomplishment of their object, that the plants should have been subject to their system of management from the first, or initiatory, stage of growth.

These disadvantages are however now being overcome by a mode of potting (subject to a corresponding treatment) which, not unexpectedly, has been a subject of surprise to some, and a stumbling-block to others, who in asserting its impracticability, because contrary to the ordinary method, have failed to apprehend the principles upon which such a course of practice is founded.

The rule which is implied in the principle now adverted to, may be defined as follows:—that *plants, the most difficult to rear, ought to be removed from their youngest state of growth, into the largest-sized pot in which they are to be exhibited as specimens.*

However oposite to prevalent opinion and practice such a rule may appear to those who are unaccustomed to view facts in the light of comprehensive truths, it may nevertheless be proved consistent with the first principles of horticulture, and rendered conformable to general practice.

Having stated the rule, the following directions are necessary in the mechanical process of potting. "Take a sixteen or twelve sized pot, place three inches of bottom drainage, and fill up with pieces of peat from one to four inches square, filling the interstices with the fibrous siftings of peat, and pieces of crocks, till the pot is *quite* full; then plant a seedling or struck cutting of heath plant of similar habit, give very little water till the little plant shoots freely; and in this treatment is contained the only secret in growing fine specimens."

Such is the most ingenious and easy mode of potting yet offered to the attention of the cultivator; and though the plan of dispensing with intermediate shifts has been recognised nearly fourteen years ago, yet, for this most successful application of the system, the profession is indebted to Mr. D. Beaton, the gardener at Shrubland Park, near Ipswich, one of the most eminent horticulturists of the present day.

This novel and original mode of attaining a mature growth in the cultivation of plants, may not inappropriately be termed the *accumulative* system, and involves, by its unique mechanical application of soil, one of the most important and essential desiderata in all systems of cultivation, and without which all efforts to obtain a constitutional vigour and fertility must prove abortive — namely, a uniform circulation of moisture.

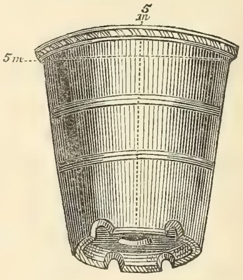
HUNT'S PATENT GARDEN-POTS.

A FEW days after we published our ideas in the March number of the present volume, on improving the form of garden-pots, we were favoured by Mr. Hunt, 29, Queen's Row, Pimlico, with some specimens of a patented article of this description, which embodies one of the modifications we then advocated. We are now, therefore, induced to recur to the question, and to present illustrations of the principle which this patentee has adopted.

In a communication we have received from Mr. Hunt, he states that the originality of his invention has been greatly questioned, and that he is accused of having borrowed it from others. Denying this imputation, he appeals to the coincidence between our own designs (as given in the number above referred to) and the chief peculiarity of his plan; assuming that, as we unconsciously concurred in a suggestion that had been previously carried into effect by him, it is quite possible that he may have similarly followed other individuals without at all borrowing from them.

Now, the history of mechanics, manufactures, and every branch of art, furnishes abundant evidence that two or more persons may have been occupied at the same time in developing really important inventions, without either of them being aware that the other was so employed. And in gardening operations, how many instances have recently occurred in which there have been great numbers of claimants to originality in the use of superior systems of treatment, each pointing primarily to the date of their first experiments, while most of them have, in fact, struck out the same course, though at different periods, quite independently of each other. It becomes desirable, then, that there be a greater disposition manifested throughout the gardening world to profit by, and expand every newly developed expedient that is likely to be useful, and a less determined inclination to contest the priority of its design or execution. The latter is, at least, of very minor importance, while the former involves the whole advancement of the art.

With these preliminary observations, we shall introduce engravings of Mr. Hunt's pots. No. I. is a pot manufactured of the ordinary material, exhibiting at the bottom the principal (and, indeed, the sole) peculiarity in its shape. The sides are, as will be observed, carried down below the usual base, and from the portion thus formed, three or four pieces are cut out in a half-circular form during its manufacture, so as to cause the pot to stand on broad feet, between which air may reach the bottom of the pot, and pass up by the common aperture through the soil.



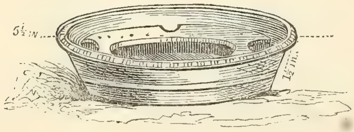
No. I.

That such a construction is of the highest value in affording air to the roots of plants, in keeping the earth from saturation, in facilitating maturity of growth and the consequent production of flowers, and in checking the undue luxuriance of leaves and branches, we have before asserted. But it is of further benefit for preventing the entrance of worms to the pots, and especially for such plants as, from being kept in a drawing-room, or from other circumstances, have to be placed in a flat or stand. It is known that when specimens in that condition are watered, the fluid passes down into the saucer, and remains stagnant there, to be drawn up again and imbibed by the plant. And however serviceable this may be to very succulent species, that are constantly demanding fresh moisture, it is certainly most prejudicial to the hard-wooded plants.

In the pot now before us, then, there is provision, by its being raised on feet, for avoiding the contact of the roots of plants with this refuse water, and they may be placed continually in an ordinary pan, without at all suffering from such a cause.

They also, from being elevated above the surface, whether of the flat, or the stage on which they stand, secure the more effective drainage of the soil, as the water will necessarily fall more rapidly and with less danger of obstruction into so large a vacuum.

But the greatest novelty in Mr. Hunt's patent, is the flat or saucer represented in No. II. of our engravings. Where the improved pot is used, a flat of the common character will suffice. Still, for the accommodation of those who prefer the pots now in vogue, or who possess a sufficient stock to render the purchase of the new ones undesirable, or who do not wish to incur the extra expense for the pots, an ingenious



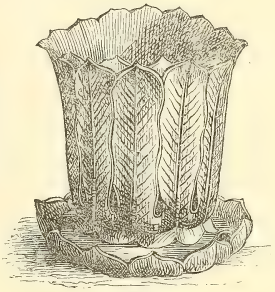
No. II

stand is manufactured, which ensures in itself the chief benefits which the pots are calculated to impart, though hardly to so great an extent.

About an inch, or a little more from the bottom of this flat, a rim of three quarters of an inch (more or less, according to the size of the flat) is furnished, and on this, the usual flat-bottomed pots are to be placed. There is thus below them a considerable open space into which the water from the soil may flow, and the advantages of good drainage, with a freedom from standing water in contact with the base of the pot, are in this way obtained.

To realize, however, the under current and circulation of air which are gained by the new pot, three or four apertures are made round the inner rim of the flat, and nearest to its side, so that the water which collects in it, and the soil in the pot, through the medium of the usual hole at its base, will be thus freely subjected to atmospheric influence. We regard this as a very excellent contrivance, and one which all who have to put plants in stands, and yet use the ordinary pots, should invariably call in to their aid.

Our other figure, No. III., exhibits one of a quantity of varied and handsome pots which are manufactured by Mr. Hunt, with their stands, on the above principles, in Lambeth stone, and which are beautifully adapted for drawing-room windows, for balconies, for the top or sides of architectural steps, for balustrades, for prominent positions in conservatories, or in greenhouses attached to residences, or, in short, for any place where a small decorated vase is desired. Another, and rather simpler pattern, is shown in the wood-cut of *Medinilla erythrophylla*, at page 80 of the present number.



No. III

We have now only to express a hope that Mr. Hunt will apply the remaining hints we gave in a former page, and which he says he can easily embody in his plan. These refer to increased shallowness, and the supply of an additional number of apertures at the bottom of the pot. With these alterations we should pronounce his pots perfect, according to our existing knowledge of the subject.

FLORICULTURAL NOTICES.

NEW OR BEAUTIFUL PLANTS FIGURED IN THE LEADING BOTANICAL PERIODICALS FOR APRIL.

AMI'CIA ZYGO'MERIS. "The genus *Amicia* was so named by Messrs. Humboldt and Kunth, in honour of John Baptiste Amici, of Modena, who has so much distinguished himself by his microscopical observations, especially on the movement of the fluids in plants. It is chiefly distinguished from *Poiretia* by the peculiar form of the calyx. There is another remarkable feature in the entire plant, leaves, calyx, and even the corolla—that they are everywhere filled with pellucid, glandular dots, resembling those of *Hypericum*. The first discovered species is a native of New Grenada ; the second, and only other yet known, (*A. zygomeris*,) is a native of Mexico, was first taken up by Decandolle, and afterwards more fully described in the 'Linnæa,' from specimens gathered by Schiede in woods at Jalalingo ; and fine native specimens were collected by M. Galeotti, upon the Cordillera of Mexico, near the Pacific, growing in woods and by river sides, at an elevation of from 5500 to 8000 feet above the level of the sea. Its flowers are large, copious, and the foliage extremely delicate. It was introduced to this country from Paris by Messrs. Rollisson, of the Tooting Nursery, and by them kindly given to the Royal Gardens of Kew, where it blossomed copiously during the early winter months. This blossoming was probably hastened by its growth being checked from cuttings being taken from the plant." The flowers are deep yellow, and showy, while the leaves are divided into two twin pairs, and have leaflets of an obcordate retuse figure. *Bot. Mag.* 4008.

CENTRADE'NIA RO'SEA. "A pretty greenhouse half-shrubby plant, introduced from Mexico by Messrs. Lucombe, Pince, and Co., nurserymen of Exeter, by whom it was sent in flower to the Horticultural Society in January last. When allowed to blossom quietly in a cool greenhouse, it forms a deep green bush, studded all over with gay flesh-coloured stars ; but as the petals easily fall, the plant does not bear travelling well. It is a soft-wooded species, growing a foot or so high, in sandy peat, and striking readily from cuttings. As far as we can judge from our experience of a few weeks, it seems to require a sunny situation, but not a dry atmosphere." *Bot. Reg.* 20.

CAMPA'NULA LŒ'FLINGII. "A beautiful little annual, found wild in sandy places all over Portugal, also near Madrid, and in the country round Mogador. M. Alphonse Decandolle observes, that it has the habit of *C. patula*, but differs in being more branchy, in having broader and less acute leaves, in its annual root and deeply-furrowed capsule. The latter is indeed remarkable ; the three carpels of which it is composed adhere only by the middle—a circumstance by no means common among plants with an inferior ovary, unless in the Umbelliferous order. It is a pretty half-hardy plant, growing from six to nine inches high," of a very graceful habit, producing great numbers of blue flowers, "and requiring a light rich sandy soil. The seeds should be sown either in the month of August or March, and treated in the same way as *Rhodanthe Manglesii*, or similar half-hardy annuals. If sown in the autumn it should be potted singly, and kept in small pots placed in a dry situation free from frost during the winter ; when sown in the spring they may be kept in a cold frame, but where they have plenty of air, as the plants are very delicate and are apt to damp off. The autumn-sown plants will flower about the end of May, those raised in the spring not before the middle of July. They continue a long time in flower. It may be grown in the open border, if planted in a warm and dry situation, after the danger of spring frost is over." *Bot. Reg.* 19.

CRO'CUS INSULA'RIS. "Many bulbs of this pretty and variable *Crocus*," writes the Hon. and very Rev. W. Herbert, Dean of Manchester, "were sent to Spofforth, at my request, by M. Palmedo, the British Consul at Bastia, having been procured through his kind offices by Signor Romagnuoli, from Turiani, and the Bocca di San Antonio, three or four leagues from Bastia. The greatest pains were taken to discover the *C. minimus* of Decandolle ; it is certainly one of the smaller varieties of *insularis*, which name, given by M. Gay, though posterior, must be preserved to the species, because *minimus* is only applicable to the smaller varieties. The species, which has sometimes a faint smell of primrose, approaches most nearly to the Italian *C. suaveolens*, from which it may be distinguished, in all its varieties, by the absence of yellow in the throat, which is deep both in *suaveolens* and *imperatonianus*. The absence or presence of yellow in the throat seems to be an invariable feature in Croci. *Insularis* produces usually only one shoot and flower, and no bract ; but the fourth rare variety found on M. Pigro and M. d'Oleastro, approaches to *C. versicolor*, by a two-flowered involucre, and sometimes, though rarely, a lorate bract, and the leaf one (if not two) nerved ; but it conforms too closely with its compatriots in other respects to be separated as a species. They grow on the hills of schist, and are rare in the west of the island." The foliage is very narrow ; while the colour of the flowers seems to be a kind of crimson internally, and yellow, with stripes on the outside. *Bot. Reg.* 21.

CYCNO'CHES PENTADA'CTYLON. "The fleshy-stemmed Orchidaceæ, consisting of *Catasetum*, *Cycnoches*, *Mormodes*, and *Cyrtopodium*, probably form a group, among which we find the most astonishing deviations from ordinary structure, and the most startling variations from what appears to be the rule in other parts of the organic world. If we were informed that the cameleopard in the Zoological Gardens had shortened the vertebræ of its neck till it was no longer than a cow's, or that a kangaroo had exchanged its tail for the switch of a Shetland pony, a more surprising thing would not be announced than those changes with which we are now familiar in this group of Orchidaceæ." "Influenced by these considerations," adds Dr. Lindley, "I have till lately refrained from saying anything about the plant now figured. It has in some respects so much the appearance of *C. maculatum*, that when I first received it from Mr. Veitch, of Exeter, in March, 1842, I hesitated whether to regard it as a variety or a distinct species. A plant, however, obtained from Brazil direct by Messrs. Loddiges, has given me courage to regard it as the latter. It has a short raceme of much larger greenish-yellow flowers, with broad chocolate-brown blotches, and its lip is quite remarkable, having five finger-like lobes, and no more, instead of the lateral comb-like fringes of *C. maculatum.*" *Bot. Reg.* 22.

Gastrochi′lus longiflo′ra. "An equally rare, though less showy species than *G. pulcherrima*, requiring the same treatment, and flowering about the same time, July and August. It is likewise a native of Rangoon ; and also of Martaban, in the East Indies, and is one of the many treasures, for the possession of which the Royal Botanic Gardens of Kew are indebted to Dr. Wallich. This gentleman, in his description, observes that the present species 'has the habit of *Kœmpferia.* Its flowers are smaller than those of *G. pulcherrima*, from which it differs abundantly in being stemless, and having long petioled, cordate leaves, radical spikes, and flowers with very long tubes.'" The blossoms are on short peduncles, pale-yellowish, tipped and tinged with red. *Bot. Mag.* 4010.

Passifloˋra acti′nia. Sir. W. J. Hooker remarks of the present species, that he "can no where find the description of any Passion-flower, which accords with this, and which was sent last year from the Organ Mountains of Brazil to Mr. Veitch of Exeter, by his collector, Mr. Lobb. It produced its handsome and highly fragrant blossoms, first in November, 1842, and again, more profusely, in February of the present year ; on both of which occasions, the plant was exhibited at the meetings of the Horticultural Society, where it could not fail to be much admired. The name, as will be at once seen, is suggested by the resemblance of the flower to those marine animals, so common upon our rocky coasts, known by the name of Sea Anemone (*Actinia*). The plant deserves a place in every stove." It is a climbing species, with ovate emarginate leaves, whitish petals to the flowers, and a nectary which is beautifully banded with red, blue, and white. *Bot. Mag.* 4009.

Peristeˋria humbo′ldti. "For this noble plant, which has a pendulous raceme a couple of feet long, we are indebted to John Wilmore Esq., of Oldford, near Birmingham, who imported it from Porto Cabullo, in the province of Venezuela, about three years since. It flowered for the first time in March, 1842, and in April was exhibited to the Horticultural Society, wher it was distinguished by a silver medal. In many respects it has the habit of *Peristeria Barkeri*, but the leaves have longer footstalks. When the genus *Peristeria* was founded, nobody suspected that the long-sought *Anguloa superba* of Humboldt could belong to it ; still less did we imagine, when this noble specimen was sent from Birmingham, that it could be the very same. Nevertheless, upon attentively considering Humboldt's figure, no doubt can be entertained of the fact ; or that *Anguloa superba* is nothing more than this *Peristeria*, with the raceme made to grow erect instead of pendulous. The plant of that great traveller is described as an inhabitant of trees in the temperate parts of the province of Tumbez, near Zaruma, in Peru, and a village called Catacocha ; it was also found cultivated in the gardens of Loxa, at an elevation of between 6000 and 7000 feet above the sea. Its Spanish name is said to be *Periquito.*" The flowers are large, variously coloured and spotted, but a rich chocolate seems to be the principal hue. *Bot. Reg.* 18.

Pleroˋma benthamiaˋna. This fine species of *Pleroma*, which Mr. Gardner has dedicated to his "excellent friend, G. Bentham, Esq., is certainly the most beautiful of the genus which has yet flowered in this country. The plant, which was brought home by myself from the Organ Mountains, flowered in the autumn of 1842, in the Glasgow Botanic Garden, and, unlike many of its congeners, it is of very tardy growth, flowering freely at from a foot and a half to two feet high,—a circumstance which, along with the rich colour of the flower, cannot fail to render it popular among cultivators. In its native country it grows abundantly in rather boggy soil, at an elevation of upwards of 3000 feet above the sea level. From its hairy stamens, this plant would be referred to the genus *Lasiandra*, were it not that Mr. Bentham has satisfactorily shown, that *Pleroma* and *Lasiandra* are not generically distinct ; and *Pleroma* being the older name, it must be retained." The species is a handsome shrub, with four-sided branches, oblong-lanceolate, acute, nine-nerved leaves, and large terminal panicles of flowers, which are individually two inches across, of a fine dark purple colour, nearly white in the centre. *Bot. Mag.* 4007.

Poincia'na gillie'sii. "When I first described this charming plant," observes Sir W. Hooker, "a native of Mendoza, South America, in the Botanical Miscellany, I little thought I should one day have the pleasure of figuring it from plants flourishing in the open air, and without any covering in the winter. Yet such is the case. Seeds were introduced by Dr. Gillies in 1829, and young plants, both at Mr. Knight's nursery, and at the Royal Botanic Gardens of Kew, were removed to a south aspect in front of a stove. They have, with us at least, attained to a height of six or seven feet, and bear their rich yellow blossoms, with the singularly long and thick scarlet stamens, during the summer months, and, indeed, till cut off by the early autumnal frosts. In such a situation, no shrub can be more deserving of cultivation. In its native country, the late Dr. Gillies, its discoverer, informed me that 'it is called by the natives Mal de Ojos, and that it is very abundant in the cultivated plains of Mendoza, where it has the benefit of the water used in irrigation, seeming to be incapable of living on the dry arid lands which are not under cultivation.'" *Bot. Mag.* 4006.

Sene'cio calamifo'lius. "An old inhabitant of the greenhouse of the Royal Gardens at Kew, having been introduced from the Cape by Mr. Bowie: but it seems never to have been described by any author. Few species are better marked. The leaves, indeed, are more like those of some *Mesembryanthemum*, or Fig-Marigold, than of any Groundsel. It blossoms in August, and from its copious, large, yellow flowers, has a lively appearance." It is a shrub, growing a foot or more in height, with its branches terminating in a cluster of glaucous green, fleshy, cylindrical leaves, the apex of which is a little scooped out on one side, and "more or less dilated, so as to be almost spoon-shaped; the whole is clothed with a cobwebby compact substance, lying close to the surface." The flowers are borne on tall branching peduncles. *Bot. Mag* 4011.

NEW OR INTERESTING PLANTS IN FLOWER AT THE PRINCIPAL SUBURBAN NURSERIES.

Aza'leas, *Seedling*. Several beautiful seedling Azaleas are now blooming at Mr. Knight's nursery, King's-road, Chelsea, and among them are two which especially merit notice. They are allied to *A. indica variegata*, which is, in fact, one of their parents, and the best of them has a much deeper, livelier, and more crimson ground-colour, with a white border, and a large cluster of dark spots in the upper petals. The form of the flower is good, and, from present indications, it will probably attain a greater size than its parent above named. The other variety is a large white one, with a few stripes, which are sometimes broad, and sometimes scarcely perceptible in the petals, and a group of greenish spots in the upper portion. Both are well deserving of attention, and the latter is like *A. Gledstanesii*, but much larger, and having the conspicuous spots just referred to.

Boro'nia anemonæfo'lia. Now that this species is cultivated more extensively, it produces a much greater quantity of bloom, and a number of plants at Messrs. Loddiges', Hackney, are exceedingly gay with their pretty pink blossoms, which gleam, like a number of rosy stars, from amidst the elegant pinnate foliage. It is a very pleasing addition to our greenhouse shrubs.

Cala'nthe ochra'cea. Part of the extensive collection made by Dr. Siebold in Japan, and considered perfectly hardy. It is flowering profusely in a stove at Messrs. Rollisson's, Tooting, and has fine spikes of flowers, of which yellowish-brown is the predominant hue. Plants in a cold greenhouse at Messrs. Loddiges' are likewise coming strongly into bloom. And it will thus be apparent that it can be grown in either a high or a low temperature. On account of the liability of comparatively hardy plants to be more attacked by insects when they are kept in heat, and also because it may be cultivated more conveniently or economically in a greenhouse, frame, or open bed, it is perhaps better to treat it in the latter way. The plants should be potted or planted in a very turfy loam or heath-mould, which must be particularly well-drained and carefully watered, and they should be placed either in a partially shaded greenhouse or pit, or in a bed at the back of a wall of any kind.

CAME'LLIA LO'WII. A seedling of Messrs. Low and Co., of Clapton, by whom it has just been bloomed. It has very handsome bright-green leaves, and large crimson flowers, which a little resemble *C. imbricata*, but are more cupped and less formal. The petals are peculiarly round. It is a distinct and showy variety.

DENDRO'BIUM———? A noble new *Dendrobium* flowered last month at Messrs. Loddiges', who had obtained it from Manilla, through Mr. Cuming. It has the habit of *D. undulatum*, only the stems are not so swollen near the base. [These last, are four feet or more in height, and produce, near the summit, several long upright racemes of elegant flowers.] The sepals of the blossoms are of a yellowish-white or cream colour, and are all united into a broad spur behind, which opens in the front. The petals are longer, much narrower, slightly curled, and of a purplish tint. The lip is large, ovate, folded inwards at the sides, somewhat crumpled towards the extremity, and of a pale wine-colour. It remains blooming for seven or eight weeks.

RI'BES A'LBIDUM. After our figure of this beautiful plant appeared, we were favoured with a letter from Mr. W. E. Rendle, of the Union-road Nursery, Plymouth, who, having communicated with Admiral Sir David Milne, G.C.B., received the following account of its origin. A branch or a specimen of the *Ribes sanguineum* having accidentally bore white flowers, was layered, and, when rooted and detached, formed a fine plant, from which others were raised by cuttings ; and one of these was presented by the above gentleman to Messrs. Handasyde, by whom it has been circulated.

OPERATIONS FOR MAY.

THIS is the month during which, if the weather be at all genial, the flower garden and borders are generally stocked with those beautiful half-hardy plants which are to decorate them till the occurrence of autumnal frosts. It is therefore important that they be planted appropriately, and judiciously tended, in order to obtain the best and most permanent development of blossom of which they are capable.

Before planting anything of this kind into the beds or borders of the pleasure grounds, it is necessary that they be dug over afresh, or at least, that they be stirred anew with a fork. Half the imperfection of such plants, during the earlier part of the summer, is often due to their being placed in soil into which they cannot sufficiently send their roots before the weather is too hot and dry to permit them to advance at all, if they are not properly established. In inserting them, moreover, the operator should be careful not to tread much on the soil, nor to press in the plants more tightly than is just requisite to secure them, nor to rake over the surface after they are planted. Trampling the earth must inevitably make it less easily penetrable by the roots of plants ; placing the soil too firmly about them will lock them up, for a longer time than is to be desired, in the narrow compass they occupy while in the pot ; and raking makes the surface less pervious to rain, as well as more likely to become hardened in such a way as to exclude air.

With regard to the quality of the soil which should be used for half-hardy border plants, much discretion is required to adapt it to circumstances. And, although this is not the time for re-making or preparing borders, yet they may now be readily modified, to a limited extent. Where a flower garden lies high, exposed, and liable to drought, decayed manure may be freely introduced, and the soil should be of a rather retentive nature, such as a strong loam. Without manure, the plants in a situation of this character would be too stunted, and, should the season prove dry, will scarcely grow or flower at all till August or September ; whereas, if it be wet, the extra enrichment will not diminish the quantity of bloom.

But for the beds of a flower-garden, in a low or partially shaded spot, no manure will be necessary, and the earth should be rendered, by turning, as open as possible. A rich soil here would promote extravagant growth, and, wanting the counteractive of drought and exposure, would be detrimental to the production of inflorescence.

Where the beds are large, again, in either of such positions, it may be well to make the compost rather richer, in order to increase the size and height of the plants, and to render them accordant in this particular with the dimensions of the plot. In smaller beds, where special dwarfness is required, a lighter and poorer soil should be preferred.

If beds, or any considerable-sized patches of annuals, are now sown, it will likewise be advisable to aid them with a little manure. It is astonishing to note the difference in aspect between a bed of annuals that has been liberally manured, and one that is formed of common earth. *Nemophila insignis* is almost twice as large and handsome when grown in an enriched soil. And it may be settled as a rule, that all low annuals, which are naturally disposed to bloom freely, are immensely benefited by being slightly manured. The taller and more scanty-flowering kinds should hardly be thus treated, unless for experiment. For those which are to be cultivated in pots, the same rules will apply.

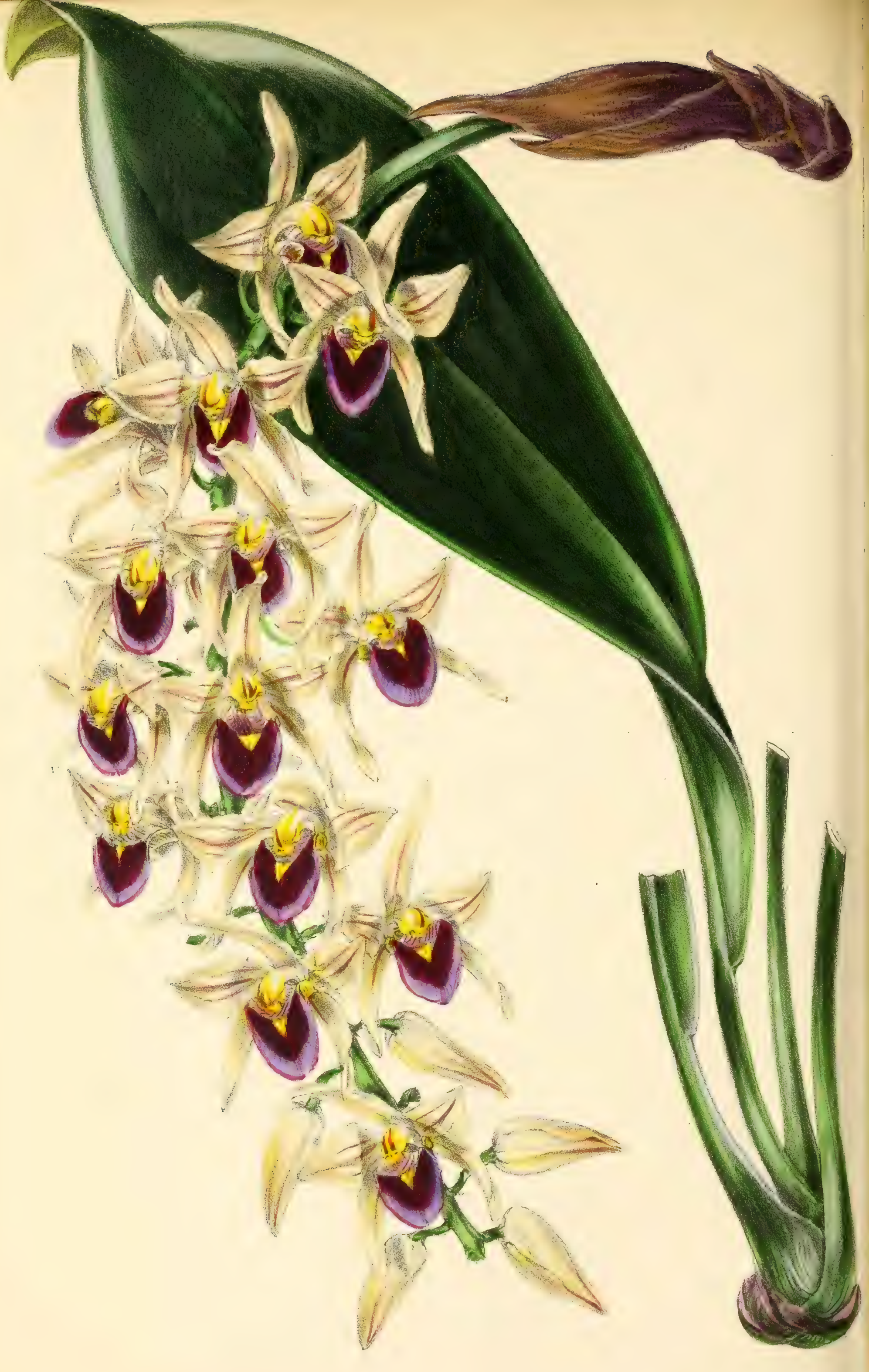
When tender plants are transferred to the borders, and for some time after they have begun to grow, whatever blossoms they may produce should all be plucked off. No exotic plant ought to be allowed to flower much ere it has made a tolerable strong and mature growth ; and this is particularly the case with the tribes that adorn the open borders during summer. It will be well, moreover, to pick or cut off the end of its shoots at the time of planting, and again twice or thrice after new ones are formed. Earliness of floral development is generally an indication (and always a precursor) of stuntedness or ill-health ; and the latter are to be remedied only by repressing the former.

In the greenhouse, show-house, or conservatory, it is not sufficiently made a principle, at this time of the year, to keep all plants that are in flower from the direct rays of the sun, by a light shading. The blooming season may thus be very greatly prolonged, without any injury to the specimens ; provided the material used for shading be nothing thicker than netting or fine loose canvass. Heaths and Pelargoniums, though seeming most to demand it, are merely two of the many tribes which are all advantaged by such a proceeding.

As the weather gets warmer, it is a common practice to keep throwing open the plant-houses more and more, in order to lower the temperature. When pursued to any great degree, however, this plan is erroneous. Plants ought to be subjected to a higher temperature than usual in this and the following month ; but the moisture supplied to the roots, thrown over the branches, and evaporated from the floors, from open cisterns, or from troughs, into the air, should be proportionately greater. They will, by this means, make their growth under the most favourable conditions, and may afterwards be subjected to free currents of air, and increased drought, with benefit.

Climbing plants, whether trained to the rafters of the houses, or to trellises, should, as they grow, receive constant attention. Unless the shoots intended to occupy a given position are fastened early in their proper places, it will, hereafter, be very difficult to direct them aright, and they will have an unsightly look. Those species, too, which bloom from the extremities of the young lateral shoots, or which do not produce an adequate quantity of branches, should frequently have their growing parts stopped, to throw them into a branching state.

As this is the most suitable time for propagating the hard-wooded exotics, which are at all tender, the operation must now be rapidly proceeded with. A shade for the entire house which is employed for propagation, is better than the shades thrown over one or more hand-glasses by themselves, because it saves trouble, and is more certain. Extra shading may, however, be requisite, for particular sorts. The canvass used for shading, should always be in the inside of the propagating-house, this being the most convenient position, and the changes of the atmosphere being less likely to affect it there.



S.Holden del & Lith

Cymbidium Devonianum

CYMBÍDIUM DEVONIÀNUM.

(The Duke of Devonshire's Cymbidium.)

Class.
GYNANDRIA.

Order.
MONANDRIA.

Natural Order.
ORCHIDÀCEÆ.

Generic Character.—*Perianth* showy. *Petals* and *sepals* nearly equal, free. *Labellum* sessile, free, without a spur, concave, sometimes articulated with the base of the column, sometimes slightly connate, undivided or three-lobed. *Column* erect, semi-cylindrical. *Anthers* two-celled. *Pollen-masses* two, often two-lobed at the back.

Specific Character.—*Plant* epiphytal. *Leaves* ovate-lanceolate, a foot or more in length, with the base of the petioles covering the pseudo-bulbs, having a strong midrib, and of a leathery texture. *Scape* pendulous, a foot or eighteen inches long, many-flowered, with large sheathing bracts. *Sepals* ovate-lanceolate, acute. *Petals* broader. *Lip* ovate, rather obtuse, purplish crimson.

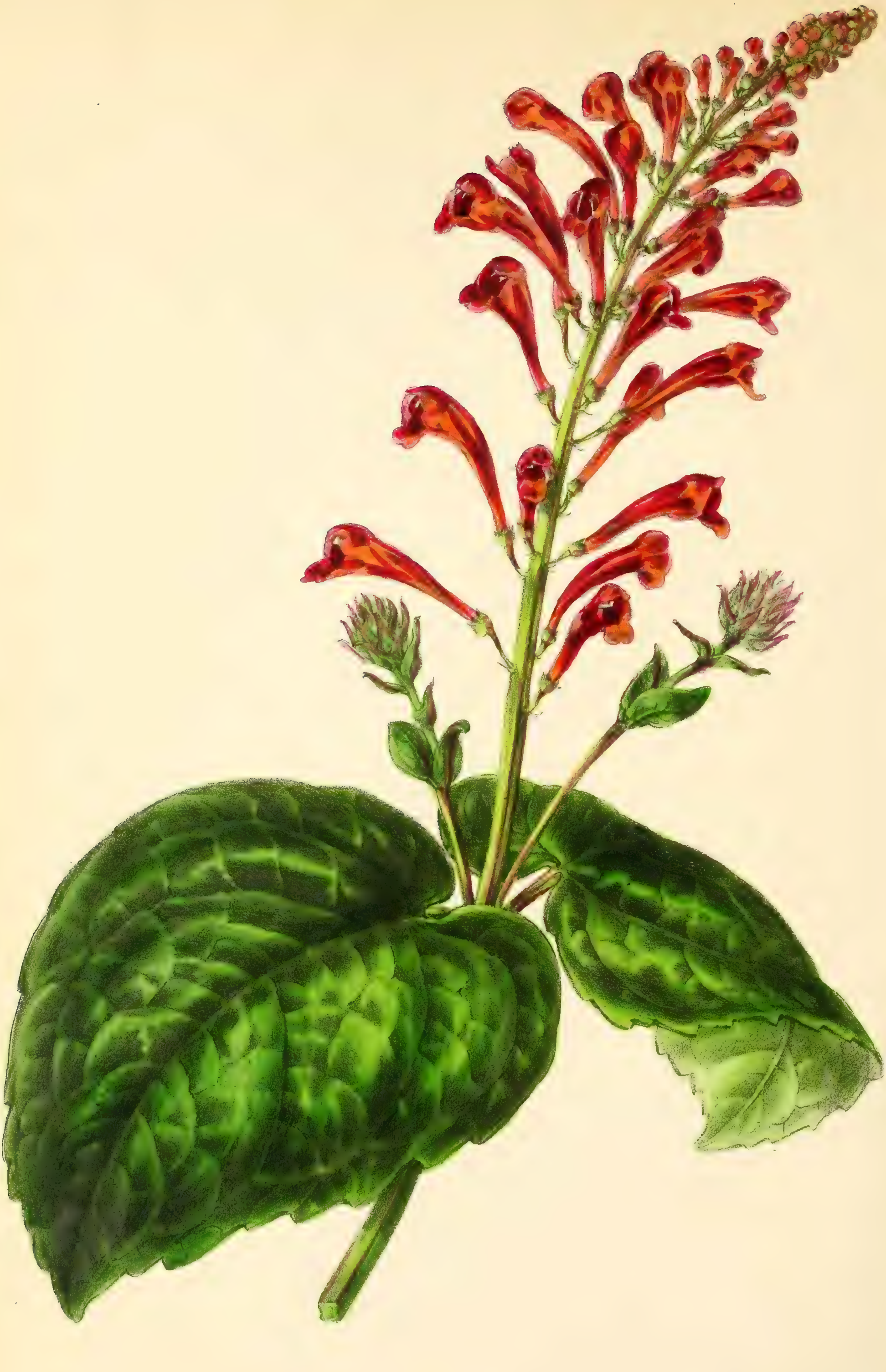
This very beautiful addition to the genus *Cymbidium*, which is named after His Grace the Duke of Devonshire, was found by his Grace's collector, Mr. Gibson, on the Khoseea hills, in India, and introduced to Chatsworth in 1837. It bloomed there in the months of March and April, of the present year.

Mr. Gibson gathered it from the trunks of decayed trees, or from the hollows or cavities of those old specimens which had become filled up with vegetable mould. In England, it grows very freely on any half-decayed block of wood, suspended in the Orchidaceous house, and kept in a shady moist place, at a good distance from the glass.

The species has roundish pseudo-bulbs, and throws from them fine racemes of bloom, from a foot to eighteen inches in length, which hang down after the manner of *C. aloifolium.* It is not much unlike the latter plant in the hue of its sepals and petals, which appear to be of a brownish cream colour; but the lip, which is their most conspicuous feature, is of a beautiful purplish crimson tint, and very rich. A specimen which was exhibited in April at the Horticultural Society's Rooms, had been in flower two or three weeks; and as the colour of the lip, like that of some species of *Calanthe*, changes and fades after the flowers have been open for some time, it was then of a dull brownish shade, which is by no means pleasing. In its earlier stages, however, it is very showy and brilliant; and this circumstance will place it before any of the other species.

As it will not be easy to furnish it with a partially decomposed log of wood that can be kept from dropping to pieces too speedily, perhaps the best mode of growing it will be to place it in a small and open wooden basket, which can be filled with crumbling pieces of wood or lumps of very fibrous heath-mould. It might even be planted in a pot containing the same materials, provided these are raised sufficiently above the rim, properly drained, and suspended, or put on a trellis of any kind through which the water can pass away from them at the bottom.

It can be kept warm and moist while growing; but cooler and drier when dormant. By taking off one of the pseudo-bulbs, and treating it carefully as above directed, the plant may be increased.



F. Bolan del & lith.

Scutellaria splendens.

SCUTELLÀRIA SPLÉNDENS.

(Splendid-flowered Skullcap.)

Class.
DIDYNAMIA.

Order.
GYMNOSPERMIA.

Natural Order.
LABIÀTÆ.

Generic Character.—*Calyx* campanulate, bilabiate; lips entire, from the coalition of the sepals, closed after the falling of the corollas, and at length cleft even to the base: superior lip furnished with a dilated scale at top, which is concave above, falling away at maturity: lower lip permanent. *Tube of corolla* much exserted, naked inside, straight or usually recurvedly ascending beyond the calyx, dilated into the throat above; limb bilabiate, upper lip entire at the apex, or emarginate; lower lip spreadingly dilated, convex, emarginate at the apex; the lateral lobes sometimes free and spreading, but usually joined to the upper lip, rarely to the lower lip. *Stamens* four, ascending under the galea, didynamous; the two lower ones the longest. *Anthers* approximate by pairs, ciliated; those of the lower stamens dimidiate, and those of the superior stamens two-celled, cordate; cells sub-divaricate. Superior lobe of the style very short; lower one stigmatiferous at the top. *Ovary* oblique, elevated upon the incurved gynophore. *Achenia* dry, naked, tubercled, glabrous, or clothed with appressed tomentum. *Don's Gard. and Botany.*

Specific Character.—*Plant* subshrubby. *Leaves* opposite, petiolate, broadly ovate, somewhat cordate at the base, rather acute, irregularly jagged at the margins. *Spike of flowers* terminal, somewhat loose. *Bracts* minute. *Corolla* deep scarlet.

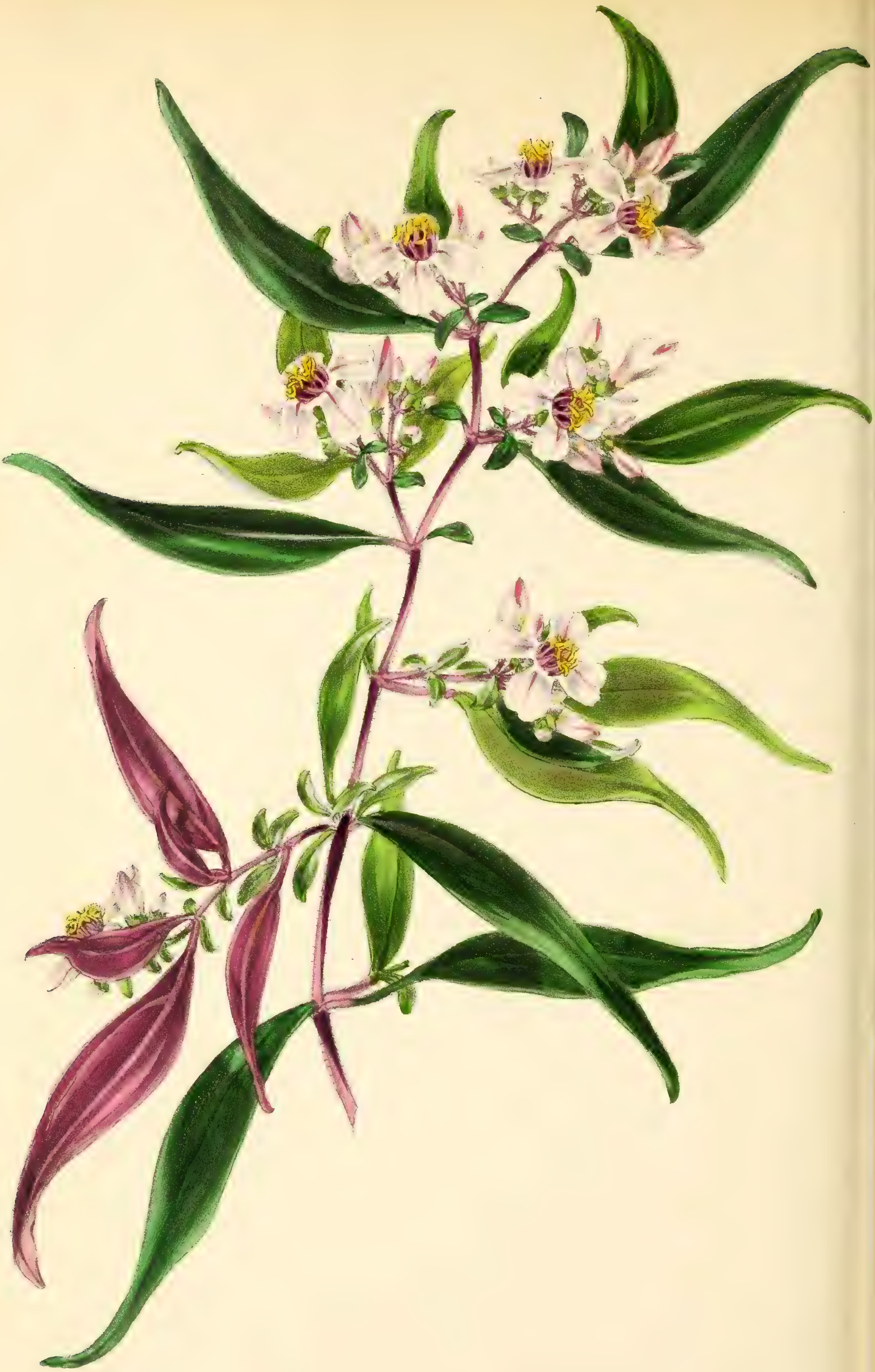
At the nursery of Messrs. Henderson, Pine-Apple Place, where we obtained our drawing of this pretty species last summer, it flowered, apparently for the first time in England, during the autumn of 1841, and continued blooming throughout the whole of the winter, and the entire season of 1842. It is said to be a native of Mexico, and is one of the few examples of plants in the genus bearing scarlet flowers.

It is a dwarf and compact-growing plant, apparently of an evergreen herbaceous or subshrubby habit, and sending up numerous stems, from the tops of which the spikes of flowers proceed. These are of a rather loose elegant character, and the individual blossoms, though somewhat small, are of so splendid a deep scarlet tint that the plant is rendered attractive from this circumstance.

As the plant at Messrs. Henderson's has been kept in a stove, which it may possibly be found not to require, there is a likelihood that its character will become even more dwarf and close, and the flowers be brought nearer to each other, thereby heightening their effect. They would doubtless also be of a yet richer tint in a cooler house. In its present state, however, the aspect of the plant is very pleasing, and its inflorescence is decidedly ornamental.

We have hinted above that further experience concerning its nature may show the propriety of keeping it in a greenhouse; and if so, it will become a more valuable plant. It is at least desirable that its capabilities of thriving in a lower temperature should be tried. It is propagated by cuttings; which, if taken off in early spring, will strike freely in a warm, moist, and shaded place. Their removal will induce the plant to form a greater quantity of laterals, and thus the amount of blossom will be increased; for a spike of flowers is produced by each of the shoots that is tolerably strong. The plant may be grown in the common mixture of loam and heath-mould; and should be watered pretty freely while it is growing. It does not need a large pot; and is well suited for placing on a shelf or stage among Gloxinias and other low-growing plants.

The name *Scutellaria* is derived from *scutula*, a small saucer, in reference to the shape of the calyx.



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Centradenia rosea

CENTRADÈNIA RÒSEA.

(Rose-flowered Centradenia.)

Class.
OCTANDRIA.

Order.
MONOGYNIA.

Natural Order.
MELASTOMÀCEÆ.

Generic Character.—*Calyx* tetragonally-campanulate, free; limb four-parted, lobes broadly triangular, acute. *Corolla* with four petals, inserted in the throat of the calyx, and alternate with its lobes, obovate. *Stamens* eight, inserted with the petals, alternate and opposite to them, smaller. *Anthers* elliptical, one-pored. *Ovary* free, four-celled; cells many-ovuled. *Style* short; stigma subcapitate. *Capsule* covered by the calyx, four-celled; cells four-valved. *Seeds* numerous, elliptically club-shaped, echinate.

Specific Character.—*Plant* an evergreen shrub. *Leaves* ovate-lanceolate, unequal-sided. *Racemes* subcorymbose, terminal, much longer than the leaves. *Flowers* pale pink, twice the length of the ovary.

Synonyme.—*Doncklaeria diversifolia.*

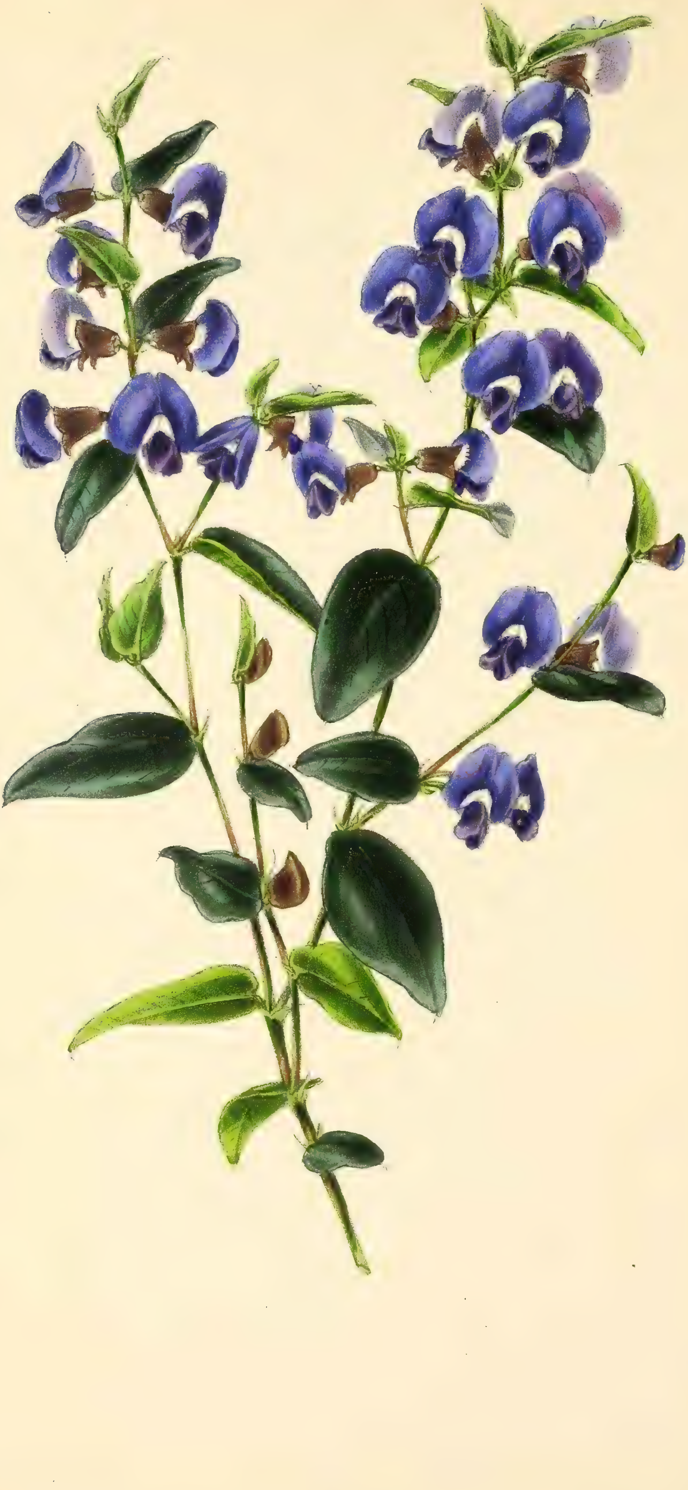
In the nurseries round London, this attractive little plant is generally known by the name of *Doncklaeria diversifolia*, which is probably a Continental title; though we have no hesitation in identifying it with the *Centradenia rosea* of Dr. Lindley in the Botanical Register. In that work it is described as being introduced from Mexico by Messrs. Lucombe, Pince, and Co., of Exeter, within the last two years. It has, however, been in the Epsom Nursery for four or five years; and Messrs. Young having flowered it there, we had the accompanying figure prepared from their plant in March last.

Speaking of its relations and character, Dr. Lindley mentions that "Mr. Bentham has pointed out its near affinity to the *Rhexia inæquilateris* of Schlechtendahl, afterwards called *Plagiophyllum* by him, and *Centradenia* by Don. Upon turning, however, to an authentic specimen of that plant, we find it different in some respects: its leaves are much larger and thinner, its flowers appear to be smaller, and are arranged in little terminal racemes, much shorter than the leaves. Neither can this be the *Plagiophyllum grandifolium* of Schlechtendahl, which is described with leaves as much as six inches long.

" One of the most curious circumstances connected with this plant, is the constant abortion, and frequent loss, of one of its two opposite leaves. This tendency to abortion always alternates along the branches, so that if the first imperfect leaf happens to be on the right of the branch, the next is on the left, and so on. The smaller leaves readily fall off, and thus the others appear to be alternate."

The plant forms a very neat and delightful shrub, never growing, apparently, more than a foot high, and yet developing such a number of branches, that when the whole are in bloom, the blossoms almost literally constitute a covering of pinkish white. The leaves, too, are of a rich crimson hue on the under side. No plant could flower more abundantly; and it blossoms in the stove from the month of February, the number of blooms being, at the present time, not at all diminished. The flowers seem to close during the night and in dull weather, opening again under the influence of bright light and sunshine.

Being so small and of a spare habitude, it should not have a large pot nor a rich soil. The ordinary proportions of heath-mould and loam will be suitable; though the former, perhaps, should be used rather more freely than with the majority of shrubby exotics. It has been kept in a stove up to this period; but it is quite possible that it will finally prove able to flourish in a greenhouse. Cuttings root easily, if planted in shallow pots of sandy earth, placed in a slight heat, and shaded.



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HÒVEA SPLÉNDENS.

(Splendid-flowered Hovea.)

Class.
MONADELPHIA.

Order.
DECANDRIA.

Natural Order.
LEGUMINÒSÆ.

Generic Character.—*Calyx* bilabiate; upper lip semibifid, broad, and retuse; lower one three-parted. *Keel* obtuse. *Stamens* all connected, the tenth or upper one only more or less free. *Legume* sessile, roundish, ventricose, two-seeded. *Seeds* strophiolate. *Don's Gard. and Botany.*

Specific Character.—*Plant* an evergreen shrub. *Leaves* nearly sessile, slightly cordate at the base, ovate, terminating rather abruptly, and mucronulate, dark green above. *Calyx* covered with dark brown tomentum. *Flowers* generally in pairs, almost sessile. *Corolla* very showy. *Standard* bright blue, with a white ring at the bottom. *Wings* and *keel* purplish.

We have not been able to find any published description of this beautiful species, which was raised in the nursery of Mr. Knight, King's Road, Chelsea, from seeds collected in the Swan River Colony, and presented to Mr. Knight by Captain Mangles, R.N. It flowered about two months ago in a warm greenhouse, and our drawing was then made.

In its general characteristics, particularly in the flowers, it bears a considerable resemblance to the best of all Hoveas, *H. Celsii.* On a more attentive inspection, however, and a comparison of the two plants, they are materially different. The leaves of *H. Celsii* are distant, rather oval than ovate, pale green, and retuse at the extremity. Those of *H. splendens* are closer, more thoroughly ovate, a little inclined to be cordate at the base, stipulate, having a strong mucrone at the end, and deep green, even in a stove, on the upper side. The flowers appear always to come in pairs, and the branches seem altogether weaker than those of *H. Celsii.* In regard to the blossoms, they are nearly equal in size, and quite as rich in colour, as those of the species with which we are now comparing them.

The plant is cultivated in the same way as the rest of the genus, of which it may be remarked that, from a fear of using the knife in pruning, or of stopping the shoots in any way, cultivators allow them to grow up with bare stems, and long naked branches; so that a dwarf and bushy specimen is rarely met with. This system requires alteration; and we would recommend either the pruning of the shoots in winter, or while they are growing, though this must always be done when the plants are young and small.

Unless the roots of these plants are carefully watered, and the soil kept well drained, there is no tribe more likely to die off in a sudden manner when they have attained any size. They should be potted high in the centre of the pot, so as to have the junction of the roots with the stem almost bare; and we would prefer a soil with more of light open loam in it than one containing so much heath-mould as is commonly used. But whatever soil be chosen, it should be well mixed with pieces of broken stone or potsherds for drainage.

The species is increased by cuttings, which should be put in during the spring months, if possible, and may be struck in the usual manner.

Mr. Anthony Pantaleon Hove, a Polish botanist, and a traveller in the Crimea, is commemorated by the generic name.

GARDENING AS A SCIENCE.

No. V.

THE *philosophy of manure*—in which term we include every substance that is not strictly earthy, but exists in or is superadded to earths—involves some of the most mysterious and knotty points of Horticulture. We despair to attempt the elucidation of the direct processes by which certain decomposable materials produce a specific effect upon individual plants : all that can be accomplished is, to compare the components of vegetable structure with those of the manure which is applied as food, or stimulus; and then to cite a few ascertained facts, in order to excite further inquiry, while they facilitate the practice of the gardener.

All modern writers, particularly since Dr. Liebig published his *Organic Chemistry*, have laid considerable stress upon the necessity of determining by the action of fire the inorganic salts and earthy substances which exist in individual plants; and they have great reason so to do; for, in agricultural crops particularly, much depends upon the proper application of saline matters.

We must, if we hope to effect any useful purpose, begin with first principles, although at the risk of some repetition.

Soil consists of *earths* proper, combined with more or less of decomposable matters. A good natural loam is the staple of the field and garden: it comprises *sandy* matter to the extent of more than one half, a large proportion of alumine, or the base of clay, a portion of oxide of iron—the source of colour—and a varying per-centage of chalk (carbonate of lime). These substances are pure *earths*, in the common acceptation of the word, though strictly speaking, they are all of metallic origin.

Good loam is the foundation of the kitchen-garden; it is also essential to the melon, and every kind of fruit, not excepting the pine-apple. For *floriculture* in pots, however, the parings taken from a pasture or common of loamy earth is always preferable, unless we except the fibrous soil, which is obtained by the slow decay of couch-grass roots, raked or harrowed from the surface of the very best corn-land. This couch-loam, as we term it, varies more or less, according to the nature of the land in which the root-stocks grow—proving the fact, that some of the earthy ingredients is taken up by the sap-vessels, and deposited in the organs of the plant. This loam, incorporated with certain quantities of heath or moor-soil, may be rendered suitable to every ornamental plant of the stove or greenhouse, with the exception of those hair-rooted tribes which require heath-soil alone.

The most delicate species of *manure* (i. e. decomposable matter) is found in heath-soil (now erroneously called *peat*). By analysis of several varieties, it has been shown that from 70 to 90 parts in the 100 are white sand, with a faint trace of oxide of iron; the 30 to 10 parts lost being black vegetable remains, destructible by fire; or, in chemical language, reducible at a red heat to carbonic acid and water, owing to the attraction of oxygen from the air during the act of combustion. From this analysis, we learn that the heaths and American hair-rooted plants which flourish in pure heath-soil, require no other manure than that very minute portion of black humus, almost reduced to the condition of charcoal, which is found in the mould of heathy districts.

In the cultivation of the *Gesneraceæ* tribes that are usually furnished with a sort of "cormus," or bulbous depositary of their nutritive juices, besides the hairy processes which constitute the true roots, we appear authorized to employ a little loam, and decayed horse or cow-dung, in addition to the bulk of heath-soil that their delicate roots require. We have tried powdered charcoal pretty freely for these plants, according to the suggestion of Liebig, but without corresponding success. Charcoal cannot be decomposed by vegetable action: a *hydro*-carbonate must be present in the soil, otherwise water cannot be formed, and without the presence of water, sap cannot be generated.

Every fact yields some evidence of the identity that may be traced between vegetable vital action upon deposited manures, and the *electrolyzation* of the voltaic trough.

The peculiar operation of manuring substances, and their specific adaptation to individual plants, may be in a degree ascertained by the colour of the foliage. Whenever the verdure acquires a tint of yellow, in lieu of the darker rich hue which is natural to it in a state of health, there can be little doubt that there is something wrong in the soil. It is true that the natives of warm climates, if kept too cool, will exhibit the yellow tint; and most juicy plants, if droughted, will also be similarly affected: but setting aside these exceptions, a vitiated colour of the foliage generally proves that the soil is in fault.

We are far too much in the dark respecting the operation of vegetable and animal matters upon the tints of flowering plants, and it would be a desideratum of very great interest to acquire some correct knowledge on the subject. In nine cases out of ten, we believe that the *loam* employed in different gardens is the cause of those variations in shade which the same individuals exhibit; for as loam is liable to a thousand modifications, as respects the quantity and texture of its constituents, and moreover as all virgin loam contains one or other of the alkalies, (potash generally,) it is evident that the gardener ought to keep a jealous eye upon this staple material.

In the kitchen-garden any tolerably good loam will do well enough with all the Brassica tribes; but it is a widely different affair where we have to experimentize upon the delicate Gloxinias, Euphorbiæ, Russellia, &c., and particularly with that most beautiful but captious shrub, the Camellai, in all its varieties.

Here again it becomes a duty to insist upon the rejection of all coarse spit loams whatever; and, unless the purest turf or decayed couch-roots can be constantly obtained, to abandon common loams, and to depend upon leaf-mould, bog-earth, and good sand, rather than to apply an earth which, in too many instances, produces a sickly or uncertain vegetation.

Having hinted at a probable cause of discoloration, to which we add that a plant can obtain little else than the soluble salts which exist in loam,—the earth itself being almost insoluble,—it may be inferred that the colour of foliage depends chiefly upon the vegetable matters which exist about the roots of plants; and hence, that leaf-mould, properly reduced, is one of the best appliances that the gardener can resort to.

This assertion is borne out in the instance of *Lobelia;* for if in parterre-culture, one set of plants be "bedded out" in a loamy soil, and a second in one which consists almost entirely of two or three year-old leaves, the foliage of the latter will exhibit an intensity of verdure quite striking when compared with the yellowish, and therefore sickly hue of the former.

In gardens where mushrooms are extensively cultivated, a great quantity of pure horse-droppings are employed: which, when the beds are exhausted, are found changed to a peculiar orange-coloured mass, approaching to mould. This substance is a modification of vegetable matter, and is extremely valuable in parterre gardening. We are certified of this by having closely observed the practice of a gardener, whose experience in floriculture extends to more than thirty years. He blends the old mushroom manure with a very good (proved) loam, digging out every small bed on the lawn, to the depth of 12 or 18 inches, and replenishing with this new compost. The effects produced are extraordinary: noble developments, dark verdant foliage, and most richly-tinted flowers, are the invariable results. Now it must be borne in mind that old horse-droppings are little more than vegetable remains, void of urinous or stimulating salts. Hence, they are speedily reduced in the soil, and, like leaf-mould, develop during their future decomposition the elements of water (oxygen and hydrogen), and also carbon, in a form wherein it can instantly combine, with *hydrogen* to form carburetted hydrogen, with *oxygen* to form carbonic acid, or with both, in varying, but appropriate quantities, exactly adapted to the habits of each individual plant.

At this point we may appeal to chemical theory, and suggest that, as *carbon*, duly laborated, is certainly the cause of colour, the vital energy of a growing vegetable acts, first, (as a voltaic apparatus,) in decomposing the water or moisture of the earth in contact with the manure; secondly, that the stream of electricity, which invariably is produced whenever water is decomposed, disturbs and then decomposes the manure, developing its elements, and causing them to combine in definite proportions, precisely suitable to the constitution of each plant.

This latter proposition is not fanciful; for as it is certain that manures are more rapidly consumed during the growth of plants than when the ground is without crop, it follows that the disturbing forces must correspond with the peculiar energy exerted by each specific individual, and therefore that the new combinations of elements will be in accordance with effects produced by the disturbing power.

Since man is but an instrument to direct the machinery placed at his command by Infinite Wisdom, it is not likely that he can discover the minutiæ of first causes. He is an observer, who ought to mark and register the results of his observations ; and in proportion that he does so, he will obtain a knowledge of effects from which he may infer the existence of certain general laws.

We have merely attempted, in the foregoing sketch, to suggest a few leading facts, as the outline of a principle of manuring, upon which a rational yet unassuming theory may be erected and tested by experience.

THE NEW SYSTEM OF POTTING.

In the remarks contained in a previous Number, to which the following are intended as a sequel, an opinion was offered that the present test of superior cultivation is "the greatest amount of constitutional vigour within a limited period ;" and as this, when attained, can but be regarded as a primary step towards an ultimate object, it may with equal certainty be affirmed that the highest purpose of cultivation is a constitutional vigour, combined with a uniform development of bloom. In attempting to define the means generally adopted for the attainment of this, it will be of interest to glance at the principles or conditions upon which such results depend.

The present methods of cultivation may be considered under two distinct mechanical operations, or modes of potting. The first, from the simplicity and uniformity of its process, has been termed a Progressive and Accumulative system ; and the second, from its required exposure to successive seasons of excitement and repose, may not unaptly be designated an Alternate or Restrictive system.

The leading feature of the former (Accumulative) is found in its adaptation to attain a maturity of growth, apart from the aid of intermediate shifts, by removing plants, in their youngest state, to pots commensurate in size with their ultimate vigour and fertility. The latter, or Restrictive system, is well characterized by its dependence for the same end upon the ordinary practice of shifting gradually from smaller to larger pots. That there should exist many doubts and suggestions as to the practicability of the first-named method, is not surprising ; since its procedure is totally opposite to that of general practice, in not being a gradual process of repeated and protracted efforts, but an application of first principles towards producing an immediate effect. Each system is not less opposite in its mechanical details than in its natural tendencies ; the Accumulative being an immediate application of heavy quantities, proportionate to a perfect development of parts, in approximation to a condition of nature; and the Restrictive or frequent shifting system, an application of materials proportionate to the *existing* vigour of the plant in its successive stages of growth.

In alluding to the general features and ultimate effects which distinguish the Accumulative from other modes of cultivation, its relative value will be more readily inferred by showing its connexion with, and dependence upon, those principles of Horticulture which are calculated to ensure the most perfect development of vegetable growth.

The only natural mode of perpetuating the constitutional vigour of a species is by reproduction from seed; and it is strictly in harmony with this law of Nature that the various modes of propagation and cultivation are to be viewed. Thence it follows, that in proportion as the means employed for the multiplication of plants are artificial in their character, will be the premature exhaustion of the individual parts thus multiplied; in other words, if, in the propagation of a desirable plant by *cuttings*, the latter be taken from a specimen which is already partially exhausted by excessive development of its parts, or excess of bloom, the parts thus detached will partake of the impaired vigour of the parent. And, in continuation of the same principle, a plant which has been primarily derived from its parent stock as *a layer*, will possess less constitutional or vital energy than others derived from the same source as cuttings, in consequence of the former (the layer) already possessing, in its detached parts, a larger share of that maturity which approximates to an ultimate development of growth than the latter.

The conclusions to be derived from the foregoing remarks are, that the several organs of a *seed*, a *cutting*, and a *layer*, are each endowed with a principle of vital energy varying in power from a seed downwards.

It may further be stated, in relation to the present subject, that the vital functions of plants are diminished in force in proportion as the primary development of their parts is prematurely hardened or matured, whether arising from excess or deficiency of the elements which sustain them.

Much that is superior in cultivation is known to depend upon the skilful application of materials modified to the variations of local influence and after-management.

In support of a progressive and accumulative system of cultivation, the following principles may be offered, apart from those minor evidences which every successful routine of practice supplies.

1st. "For the maintenance of a plant in health, it is *indispensable* that the supply of fluid by the roots should be *continued* and *uninterrupted* *."

2d. "The smallest leaf at the extremity of a branch of a lofty tree must assist in setting in action the absorbing power of roots, at whatever distance those roots act from the other organs. If this reciprocal action is not maintained *without*

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* Lindley's Principles of Horticul. 32.

interruption, and if anything occurs to check it during the period of vegetation, the plant will suffer in proportion to the amount of interruption *."

From these statements, it appears that whatever tends to protract or suspend the reciprocal action of the organs of plants, will, in due proportion, impair their vital energy; and it is the adaptation of the accumulative system, to secure a continued and uninterrupted supply of those fluids which are essentially necessary for mature growth in plants, that constitutes its advantage and superiority over every other mode of cultivation; and this advantage is attained by transferring plants, in their young and excitable state, to large masses of soil, of a texture and quality *adapted* to their growth, and so mechanically arranged as to enable their tender organs progressively to assimilate their food without being liable to excess of moisture, or to be retarded in their after-growth.

One of the strongest arguments against the adaptation of the restrictive system in the shifting of plants, to attain a simultaneous and accumulative vigour, is found in its tendency to reverse the laws of Nature in regard to the formation and disposition of the roots. This is an evil inseparable from the ordinary modes of cultivation. The natural function of roots being the absorption of food through the medium of their extremities or *spongeoles*, it will plainly appear that their capability of answering this important end will be in proportion as the modes of cultivation assimilate so near to Nature, as to admit a position by which they will be enabled to extend and ramify in search of those elementary substances peculiar to their respective organs. In admitting this view of the subject, it will probably be found that the amount of food thus obtained will be commensurate with the *diffusion* of the roots over a given surface.

These opinions are strengthened by their coincidence with the physiological fact, that "roots augment in diameter simultaneous with the stem, and under the influence of exactly the same causes †." From this principle an important inference is drawn in favour of the present argument; namely, that an inverted or horizontal position of the stems and branches being calculated to diminish their vigour and dispose to precocious fertility, similar effects will attend an inverted or circular direction of the roots, by limiting their expansive movement, and lessening their exposure to the indispensable influence of atmospheric agency.

This view of the question will probably suggest a remark, that successful cultivators would avert such an unnatural position of the roots, by reshifting previous to their being so far advanced; to which it will be sufficient to reply, that such a mode of transferring plants previously to their being tolerably established, would not only be opposite to successful practice, but attended by a risk with which few practitioners would venture to engage. That plants of slow and rigid habits (and others proportionately) should be fairly established in their respective stages of growth, previously to being further excited, is sufficiently well known;

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* Theory of Horticulture, p. 51.

† Lindley's Theory of Vital Actions.

and to attempt an opposite course would not only endanger the process, but tend to frustrate the principal objects of cultivation.

Perhaps the most obvious difficulty in adopting the system now recommended will be found in the appropriate application of large proportions of soil in the process of potting; a difficulty which at first sight may appear really insurmountable to those who are but partially acquainted with the systematic modes employed by experienced cultivators. Before alluding to the mechanical and other operations, the principles upon which they are founded will be stated.

The admirable contrivances involved in vegetable organization may properly be considered under two aspects;—first, in the adaptation of the general properties and affinities of those elementary substances which enter into the vegetable system; and secondly, in the *adaptation* of the constituent organs of plants one to another, so as to educe from those elementary principles the intended result.

The principle involved in the application of large proportions of materials in the process of potting may be defined as follows:—"All powers and qualities, whether mechanical or chemical, are singly enhanced by the accumulation of numbers; that is to say, each part or parcel of the mass is raised to a higher value or intensity, when it forms one of a heap, than when left to itself; and the more complete and immediate is the correspondence of the parts, one with *another, the more will this enhancement of the object* (acted upon) *and the combined force be accelerated towards its ultimate effect.*"

In presenting this comprehensive principle in support of the succeeding remarks, it is not urged as *alone* applicable to the practical operation in favour of which it is now adduced, but also applicable to modes of culture, however modified in their combination of quantities or qualities: it remains as certain that the law is the same, although the effects may be varied by the difference of the conditions under which it operates.

That the adoption of a superior practice in cultivation will, on the part of many, be attended with difficulties, and much risk, may naturally be anticipated.

Its superiority may be admitted, and perceived as consistent with reason and sound theory; but the *means* adequate to its successful application will, in many instances, be found inefficient, both in regard to convenient structures and appropriate materials. A superior professional knowledge will be unavailable, apart from the requisitions now named.

As the processes of potting need not be considered as generally restricted to the application of soils in those proportions stated in a previous paper; nor yet of absolute importance to the attainment of fine growth; it may be necessary to advert to those precautions considered essential to success in cultivation generally.

1st. *A primary adaptation of the soil* is of indispensable value as a preliminary means. It is probably to the facilities possessed by some cultivators more than others, for obtaining a suitable material, that the development of the heavy mode of shifting is due, rather than to any original combination or previous preparation. It has not until recently been proved that some kinds of peat soil in general use are greatly deficient in texture and quality, and in many instances are wholly rejected; while that which embodies in a greater degree a quality deemed of essential importance, namely, a texture in which pure decomposed vegetable matter greatly preponderates in a proportionately pulverized state, is preferred. The superiority of such a material is generally to be tested by the absence of all extraneous matter; and not unfrequently is it found quite free from sand.

Perhaps the most simple and efficient plan of improving the texture of soils without the aid of additional material, is simply by reducing its quantity, in the disuse of the close or binding portion, by a process as follows:—Place proportions of the compost in a sieve of two-eighths of an inch in the wire-work, which by being *partially* moved will permit the loose portion of the soil (as the least valuable) to pass through, and the *remaining* portion when modified (if requisite) by being entirely passed through a sieve of a medium size, will be more uniform in its texture, and favourable to an equable circulation of moisture. This process may be varied for any quality of soil, either for the purpose of attaining luxuriant growth, or for the first potting of young stock.

2d. *Suitable proportions and arrangement of material in the process of potting* are also essential to superior cultivation, particularly when young and tender plants are transferred from small to large pots. A rule of proportions, applicable to the former part of this head, has already been given in a previous page. The two most general and fatal errors in potting are, first, in so placing the large potsherd (or other material) over the bottom hole of the pot, as to admit a very imperfect passage for the superfluous moisture; and, secondly, a very partial, and often an entire omission of *intermediate* drainage, as a portion of porous material placed immediately upon the lower drainage, to prevent the soil from filling up the interstices of the potsherds beneath, and to modify, by its absorbent qualities, the fluctuations of temperature to which plants may be exposed; also, by its coarser texture, to prevent the component parts of the soil above from remaining saturated in extreme cases of exposure. Next to the quality of soils, the success of cultivation generally will, in a great measure, depend upon the quantity and arrangement of the remaining parts.

3d. *A due exposure to atmospheric and solar agency* is indispensable to the successful co-operation of other influences employed in the process of cultivation. The distinct agencies upon the mutual action of which the successful management of plants depend are, first, those to which they are subjected in the process of potting, &c., viz., the influence of organic and chemical substances; and, secondly, those which act upon their external surfaces, as light, air, heat, &c., each affecting to a certain extent the whole vegetable system. Atmospheric and solar influence should be so modified as to balance the power of absorption to which plants are exposed; in other words, the intensity of the former should, as a general rule, be in proportion to the amount of material used in the process of potting, regulated at the same time by conditions of growth, situation, &c.

"*An error in first principles can be rectified by no after-application of scientific rules.*" There is ample evidence to prove, that it is "the *elementary conditions* of an organized being, which favour the ultimate development of its parts."

It has been a subject of surprise to some, that the system whose merits have been advocated has not been practised at an earlier period than the present. Perhaps the talismanic influence of *custom*, and the "ten thousand" daily determinations to reduce the "majestic proportions of Nature" to the pigmy restrictions of art, are not the only obstacles which science has had to remove in its march of triumph. The deductions of reason, and the investigations of truth, have long ago proved that every operation in art is limited in its effect, in proportion as it recedes from the laws which Nature has prescribed for the same end; and in appealing to the result of superior cultivation, or the records of professional practice, no fear need be entertained if it should be found that every instance of pre-eminent success should prove that the means used were invariably an *approximation* towards an accumulative system of cultivation.

An inquiry has been suggested, as to the probable period for which specimen plants of mature growth may be cultivated with proportionate success. The ultimate object, or highest purpose of cultivation, has been previously laid down as being the greatest constitutional vigour, combined with a uniform development of bloom; it is consequently evident that the more nearly such a result is attained, the more exhausted will be the vital energies of the plant—a development of bloom being the matured or ultimate function of vegetable life.

The renovation of such plants will depend upon the skilful appliance of those remedial operations which Nature points out.

The first means employed is the *early* and *entire* removal of decayed blossoms; and secondly, a removal (by pruning) of those portions of the plant which are partially exhausted by the production of bloom, at least so far as the proportions of the plant will admit. By thus limiting its circulation, its energies will again be excited by the accumulation of its sap, which, aided by a partial cessation of watering, and a closer and higher temperature by a few degrees, will serve to unfold its power in the development of buds.

Two instances occur in the Pine-apple-Place establishment, which serve to show that even renewed shifts to other pots is not necessary in all cases of plants in large pots. The first is illustrated by the plant of *Zichya coccinea*, (formerly *Kennedya*,) which forms an engraving in this Magazine for May. The specimen was grown in a large 16 pot, and bloomed profusely in the summer of 1842. Its consequent exhaustion appeared to preclude the possibility of the plant being again excited to a growth equal to a renewed bloom. After removing the exhausted blossoms, the plant remained unpotted, and again so far rallied its vigour as afterwards to form one of a purchase of plants for a Continental exhibition in the ensuing season.

The second instance, a plant of *Gloxinia rubra*, was transferred in the spring of 1842 to a large 16 pot, the compost being nearly equal parts dry decomposed manure and peat. The same season it formed a luxuriant specimen, extending two feet in diameter. After blooming, the plant remained dormant in the same pot; and in the present spring, it was replaced in the same material and pot, having been in a dry state nearly five months. At this time, it is still more exuberant in growth than in the previous season, extending three feet in diameter and nine feet in circumference.

Such are a few of the features that characterize the most superior mode of cultivation yet known; and, whatever may be the merit of other systems, which, by a skilful application of artificial means, may be productive of matured growth by protracted efforts, it may be confidently affirmed that the noblest productions have already been realized as the practical results of those principles which have been adverted to in the foregoing statements.

In conclusion, the merits of each system are of peculiar value. The *restrictive* mode of cultivation is perfect in its application to the objects of commerce. The *accumulative* system is an approximation to that sphere of operations, which, as the manifestation of Creative power, is perfect in its parts and in its design.

We owe the above, in connexion with a former article, to Mr. Wood, of Messrs. Henderson's nursery, Pine-Apple Place. The subject, now occasioning so much notice, having been first discussed in our pages, we judged it proper to give every desirable elucidation of it. Mr. Wood's comprehensive papers have, as will be seen, embraced several new points, and included some very peculiar and important details. And although in publishing them we are not to be regarded as subscribing to all their contents, we may observe that there is no practice enjoined in them which we do not consider of the greatest moment to the success of the general plan. We would, however, here caution all those who are not well versed in the routine of superior cultivation, to apply this system very carefully, and with the use of all the appliances that have been suggested. It will, we are certain, never succeed, except accidentally, in the hands of a novice. But this fact must not be distorted into a proof of its inefficiency. On the contrary, it may be taken as an evidence of its superiority, if, at the same time, it prove efficacious under the superintendence of the skilful; for there is hardly any refined process in the arts which will not have its mechanism wholly disordered when taken up by the uninitiated. While, therefore, we cannot advise those who do not understand the culture of plants, or whose circumstances are unfavourable to their high development, to adopt this system, we assuredly believe that the experienced culturist who has the means of affording every desirable condition, will find, in the employment of this plan, the realization of his very brightest hopes.

ON THE TREATMENT OF HOVEA CELSII.

Perhaps, of all the plants which are grown in our greenhouses, there is none more beautiful, or more an object of interest while it is in flower, than this fine old evergreen shrub. It blooms so profusely, its blossoms are so gay, and of such a brilliant blue, that although they come at a season when all kinds of flowers are abundant, both in the houses and the open borders, every person who sees them is charmed with their richness, and invariably pauses to contemplate them. This is, moreover, much more markedly the case with that variety which has such far larger leaves and flowers, and which we first observed, in any quantity, at the nursery of Mr. Fairbairn, Clapham; though we have subsequently noticed it in most of the London establishments.

Such, then, being the extreme attractiveness of the plant, it might be presumed that all cultivators would be emulous to bring it to perfection; and possibly this may be the fact. But so peculiar is its habitude, that after it gets above two feet in height, (which it will speedily do if in health), the stem and lower branches take that bare and leafless appearance, which is now justly deemed a defect in any ornamental plant.

To avoid this peculiarity, we have suggested in a previous page, with reference to *H. splendens*, that pruning should be resorted to; and this is unquestionably the best way of treating small plants, in order to keep them bushy. Still, where large specimens exist, or straggling ones of any size, and their unsightliness, in the particulars before mentioned, would exclude them from a first-rate collection of dwarf and well-managed species, it will be desirable to retain them, and, if possible, to bring them into a more pleasing condition.

About three years ago, we were much interested in an experiment with a large plant of *H. Celsii*, at a private place in the neighbourhood of London. As the plant was tall, and devoid of all ornament on its lower portions, it was considered advisable to endeavour to reduce so large a specimen to more limited dimensions and better proportions. In accomplishing this, the stem was released from the stake which supported it, and three or four strong stakes were placed in the soil round the plant, as near as practicable to the edge of the pot. The stem of the plant was then brought down to a horizontal position, and very carefully twisted or coiled round at the base, fastening it securely to all the stakes, where it approached them. The operation had to be performed very slowly and cautiously, for fear of breaking the stem.

This process was effected in the spring of one season; and at the growing period of the following year, several shoots were protruded from the lower part of the stem; and these, with others that followed them, ultimately formed a low and handsome bush.

More recently, at the great Exhibition in the Horticultural Society's Garden last month, we noticed a plant which appeared to be a variety of *H. Celsii*, similarly managed, from Mr. Hunt, gardener to Miss Traill, of Hayes Place. This, however, had, to all appearance, not been long treated thus; for no results in the production of lateral branches were manifest.

Now, the circumstances here described comprise a principle in the culture of this plant, and of free-growing shrubs generally, which it is of the utmost consequence to make known and inculcate. It is, that though, while advancing naturally in an erect position, the energies of the plant will be directed to the terminal extension of its shoots, and it will produce few laterals, and these only at the end of each year's growth; any specimen may, by having its stem or lower branches bent, curved, or twisted spirally, have the current of its sap so retarded and interrupted, that it will, in order to obtain a freer course for its supplies, form fresh shoots on the sides of those branches and stems.

It is the application of this rule which has operated in the case above cited; the means used being of a rather extreme kind, on account of the strong tendencies of the species.

There are several modes, however, in which the practice may be carried out, so as to be beneficial to all plants, without leaving the process employed so very apparent; and these we shall just glance at here. To divert or check the fluid resources of the plant, and so control them that they shall have an expanding as well as a rising force, is the great object to be aimed at; and where stopping the shoots cannot be sufficiently resorted to, it will depend on the extent to which the plant is inclined to branch, as to what amount of artificial assistance shall be given.

If the species, like that under notice, be so stubbornly disposed to grow erectly, that a powerful check is required to be put on its progress, so as to make it branch properly; the plan we have detailed may be fully adopted, and the stem be twisted spirally. If, again, the inclination to become bare at the bottom is not so great, but still needs modification, the stem may be bent and fastened on one side for a time, till it begins to throw out laterally, when it may be reversed, and fixed in the opposite direction, till the same result ensues on the other side. But supposing the specimen to be only a little given to acquire a straggling character, all the purposes of the culturist, in regard to bushiness, may be answered by slightly bending down the branches, and tying them in that position to a ring of wire round the edge of the pot, or to pegs inserted in the soil.

The process last mentioned will apply to by far the greater portion of those plants which demand such attention; and it is largely made use of by every good cultivator. We must explain, however, that it will be needless, or nearly so, in the instance of all species which can have their shoots duly pruned or stopped.

In effecting any plan of this sort, it is to be remembered, that, while it recommends itself in reference to plants which have been permitted to straggle, as a mode of correcting their rambling character, it will be much more advantageous and certain when employed upon young specimens; inasmuch as the avoidance of an evil, by judicious treatment, is preferable to its removal by any after measures. At such time, therefore, as the shoots are pliable, and the tendencies of the plant capable of being rightly directed, the operations in question should be commenced, and can be continued as they may prove requisite.

As an additional hint, to aid in the fuller effectuation of this plan, in respect to reclaiming deformed specimens, we would observe, that a trifling incision in the stem of the plant, at one or two of the points where its bark is most distended, will most probably facilitate the protrusion of young branches. These incisions ought not, however, to be deeper than the bark; and they should be longitudinal, or there would be a danger of the stem being broken.

FLORICULTURAL NOTICES.

Achimenes grandiflo'ra. "The drawing of this fine plant was sent, in January last, by M. Van Houtte, of Ghent. It would seem to vie with *A. longiflora* in the size and beauty of its flowers. Their colour is much more verging to red, and the leaves are rusty-coloured below. It was discovered by Schiede and Deppe, in Mexico, growing in shady places, near the Hacienda de la Laguna, in Barranza de Ioselos. Its period of flowering is not stated." The flowers are very showy, and apparently of a deep pink hue. It now exists in most of the great English nurseries. *Bot. Mag.* 4012.

Catase'tum viridi-fla'vum. "Every district of tropical South America seems to afford a *Catasetum* different from what is found in other places; but how far these are to be defined as specifically distinct it is impossible to say. The present, quite unlike, in the general appearance of its flowers, any other known to us, is yet with difficulty to be distinguished in words. It was discovered by Mr. Barclay (while employed as government botanist on the Pacific side of South America, in H.M. surveying-ship Sulphur) in Central America, and sent thence to the Royal Botanic Gardens of Kew, where it flowered in the Orchidaceous house, in the summer of 1842." Its pseudo bulbs and foliage are of the common form. The great peculiarity of the flowers is, that they are throughout of a uniform yellowish-green hue. The lip is slightly ciliated. *Bot. Mag.* 4017.

Èchium petræ'um. "This is a beautiful herbaceous plant, native of rocks in Dalmatia, where, we believe, it was first discovered by General Baron v. Welder. It is apparently a genuine *Echium*, having an irregular corolla, with an erect limb, and perfectly even throat, without any appendages." Reichenbach, however, considers it the same as *Lithospermum rosmarinifolium.* "The plant was raised in the garden of the Horticultural Society, from seeds presented by Baron Welder, and flowered beautifully, in a cool greenhouse, in May. At that time it was the gayest little plant possible, with its neat clean leaves, stiff stems, about nine inches high, and pale blue flowers, which are pink before they open. It is a little hardy evergreen shrub, growing from one to two feet high. It succeeds best in a mixture of sandy loam and rough peat, that is rather poor. It must be kept in a dry airy situation, in a cold pit, where there is plenty of light at all times, but particularly during the winter. It flowers freely in the months of April and May, but is difficult to preserve through the winter, as it is very subject to damp off, even when the plants are old. It is increased by seed freely, or by cuttings of the young wood." *Bot. Reg.* 26.

Ipomœ'a cyno'sa. Thirteen synonyms are given as belonging to this plant, in palliation of which it is stated to be "variable in appearance, sometimes smooth, sometimes hairy, and, like other Ipomœas, occasionally indulging in throwing out angles from its leaves. It appears to be wild all over the tropics of Asia ; the Circars and the Moluccas according to Roxburgh, Amboyna according to Rumphius, and apparently Java, are its favourite countries. According to Rumphius, the flowers open about nine in the morning, and close at two in the afternoon. It is a perennial of great beauty, flowering most profusely in the stove." The specimens from which the drawing was made were obtained from Mrs. Lawrence, and "were the most lovely one can imagine ; in the month of December, when it is most difficult to procure such things, forming festoons of snow-white yellow-eyed flowers, resting upon a deep green shining foliage." *Bot. Reg.* 24.

ONCI'DIUM MICROCHI'LUM. Introduced some years ago from Guatemala, by G. U. Skinner, Esq., and afterwards found in the same country by Mr. Hartweg. "Although not a very splendid plant, it is far from being undeserving notice. Its very glaucous flower-stem, the snow-white lip and crimson petals, lying, as it were, in the middle of dusky-brown sepals, produce a singular and pleasing effect." It was flowered by Mr. Ashton, gardener to J. C. Harter, Esq., of Broughton, near Manchester, in September last, and the following account is from Mr. Skinner :—"The *Oncidium microchilum* I first found on the top of the 'Cuesta' of Puentezuelas, some thirteen leagues from Guatemala, and sent it to Mr. Bateman, in 1838. It was growing on a bare rock, with a quantity of dead leaves and grasses about its bulbs, and its roots woven into the interstices of the rock and mould about it, very much exposed to the sun, except during the middle of the day, when a ledge of rock seemed to afford it a little shade. I never saw it except in such situations, generally exposed, and always among rocks. It is very fragrant, and, in its native habitat, I have always observed the sepals and petals darker and more marked than this now flowered here. The temperature generally of the above habitats is 68° to 70°, and, from being exposed, cold at nights." *Bot. Reg.* 23.

RHODODEN'DRON ROLLISSO'NII. "In many respects this very striking plant so much resembles *R. nobile,* the Ceylon variety of *R. arboreum,* especially in its deep red flowers, and the closeness with which they are arranged, that we supposed it must be it ; but, upon comparing it with wild specimens from Ceylon, we find that the Rhododendron of that island has leaves silvery underneath, while in this plant they are rusty. It is therefore clear, that *R. Rollissonii* has some other origin ;" and Messrs. Rollisson inform us that it was received from the Himalaya Mountains. "It is among the handsomest of the crowd of varieties, called hybrids, which tempt the buyer at every shop, and seems in colour to resemble most a plant called Mars by Mr. Lee, of Hammersmith, but its flowers are much more compact." Its leaves are very large, wrinkled on the upper surface, and deep brown beneath. It is considered rather more tender, and to require a warmer situation, than the old *R. arboreum. Bot. Reg.* 25.

SIPHOCAM'PYLUS LONGIPEDUNCULA'TUS. "This is another fine *Siphocampylus,* for which our stoves are indebted to Mr. Gardner, who sent home seeds, as well as specimens, from the Organ Mountains of Brazil. It was first detected in the province of Rio Janeiro, by Pohl, and figured by him in his splendid work on the plants of Brazil. The length of the peduncle is found to be variable ; for, whereas the dried native specimens sent home by Mr. Gardner exhibit them as long as, or even longer than, the leaves ; in our flowering plants raised from his seeds, the peduncles are scarcely more than half the length of the leaf. The stems are long and trailing, rather than climbing, and should be fastened to a wire trellis, when the plant makes a handsome appearance. Ours flowered in January, 1843, and that of the Glasgow Botanic Garden about the same time." The leaves are long, ovately acuminate, sharply toothed, and of a thin texture. The flowers are red, with yellow segments. *Bot. Mag.* 4015.

STIGMAPHY'LLUM HETEROPHY'LLUM. "A handsome climber, hitherto cultivated in the stove by Mr. Veitch, of Exeter, who raised it from seeds sent from Buenos Ayres by Mr. Tweedie ;" but there is reason to believe, from the authority of specimens in Sir W. J. Hooker's herbarium, "that its native country is Tucuman, whence the seeds were brought by Mr. Tweedie, and reared by him at Buenos Ayres. It is a ready flowerer, and promises to be worthy of cultivation in every stove or warm greenhouse, making a beautiful object if trained against trellis-work. At Exeter it flowered in December, 1842." It is a climbing plant, with the habit of *Stephanotis,* and leaves that are sometimes entire and occasionally three-lobed. The flowers are in axillary umbels, yellow, and having the petals wavy and ciliated. *Bot. Mag.* 4014.

NEW OR INTERESTING PLANTS IN FLOWER AT THE PRINCIPAL SUBURBAN NURSERIES.

Aquile'gia Skinne'ri. This new species is now flowering in a border at Messrs. Rollisson's, Tooting; but, from having been kept in a greenhouse, and brought into flower early, its colours are by no means so rich as they ought to be, nor are the blossoms so large. Their hues are red and yellow; and they were originally described as very showy. In their present state, however, they are not better than those of *A. canadensis.*

Aquile'gia glandulo'sa. Doubtless the best of all the Columbines, and deserving of being universally grown. It has particularly large flowers, which are of a rich blue colour; this being much enhanced by the lovely white of the centre. We are not acquainted with a more ornamental border flower. It is blooming at Messrs. Rollisson's, and may, we should think, be had of any nurseryman.

Aza'lea speciosi'ssima. A seedling variety, raised by Mr. Smith, of Norbiton, who has sent it out with the foregoing title. Its flowers are of a greater size than those of any other kind we know, and their hue is a deep and splendid crimson, with numerous dark spots in the upper petals. The form of the flower is not equal to that of *A. lateritia* and others, yet it is not so loose, nor are the petals so long and narrow, as those of many smaller varieties. It is now in most nurseries, and blossoming in several.

Babia'na bi'color. In the fine collection of bulbs at Messrs. Loddiges', Hackney, this very beautiful species is now blossoming. It is dwarf, flowers copiously, and has large flowers, which are of a soft and delicate blue tint, with a whitish centre. It is one of the most interesting of its class.

Bego'nia hydrocotylifo'lia. In our previous mention of this elegant plant, we did not state that its pretty flowers are very delightfully fragrant. This we have since ascertained to be the case; and the circumstance will certainly add much to its attractiveness.

Choroze'ma macrophy'llum. There is a plant which is cultivated rather extensively in the London nurseries under the name here given, which is apparently a variety of *C. cordatum.* It is, however, much superior to that species, having larger foliage, and handsome flowers. Its habit, too, is somewhat stronger. It blooms most splendidly during the spring months, and is a fine acquisition to a greenhouse.

Cyrtochi'lum stella'tum. This is a lovely Orchidaceous plant, remarkable for the boldness and showiness of its half-erect racemes of flowers. These last are arranged with great regularity on the stalk, and are large, and of a creamy-coloured ground, with a few pinkish markings. It is flowering handsomely at Messrs. Rollisson's, Tooting.

Epide'ndrum selli'gerum. One of the pseudo-bulbous division, with neat pseudo-bulbs and leaves, and a long raceme of greenish-brown and pink flowers. These are not very ornamental; but they have such a delicious odour that the species is eminently worthy of being grown, in order to scent the house in which it is kept. The fragrance is something like that of violets, and almost equal to *E. ionosnum.* Messrs. Loddiges have it flowering liberally in a cool stove, where it lasts in bloom for a considerable time.

Hydra'ngea japo'nica. Part of the large collection made by Dr. Siebold, in Japan, and introduced to European gardens. It is more curious than showy, and somewhat resembles the *H. hortensis,* except that it has small and poor flowers. It is in blossom at Mr. Low's, Clapton; and having been kept in a stove, will probably improve by greenhouse treatment, and may perhaps be much ameliorated by skilful cultivation.

OPERATIONS FOR JUNE.

The extreme wetness of last month has offered a favourable opportunity for planting out all kinds of tender plants; natural rains being so much better for them than artificial waterings, because, in the latter case, the water is not applied gradually enough, and binds up the surface of the earth after this has become dry again. It may be taken as a rule in all cases of watering, where a rose has to be used on the pot, that the application should never be continued till the plot of ground becomes covered with puddles; but rather that the water should be given more sparingly at two or three different times, so that it may soak into the ground thoroughly before any more is administered.

If, from a want of time, or through fear of frost, any half-hardy plants are not yet transplanted, they should be put out immediately, choosing the cloudiest or most showery weather for the purpose. The same sort of weather should also be selected for planting out the thinnings of the March and April-sown annuals, and likewise the tender annuals that have been raised in a hotbed. So common and so easily raised are Balsams, Schizanthus, &c., that a portion of those prepared for the greenhouse may be turned out into the flower-garden, where they will produce a beautiful effect.

In thinning annuals that have been sown in the borders, care should be taken to do it early, so that the young plants do not get so crowded as to injure alike those which remain and such as are to be transplanted. The superfluous plants should also be taken up carefully, that neither their roots nor the roots of such as are left may be damaged. It is better always to leave the healthiest plants, and to thin them, at first, to about half the extent they will ultimately need ; that is, if six or eight plants are finally to flower in the spot, twelve or sixteen should be left in the first thinning. As it is more than probable that the wet weather will bring out an abundance of snails and slugs, a few of the outer leaves of the cabbage or lettuce should be strewed round each plot of annuals, and examined every morning, to remove and destroy those which attach themselves to their under surface. They may be renewed occasionally, as they wither or are eaten. This is the best way of catching such vermin, and should be pursued likewise with the tender plants that have been brought from frames, particularly those which are at all succulent, as Dahlias, &c.

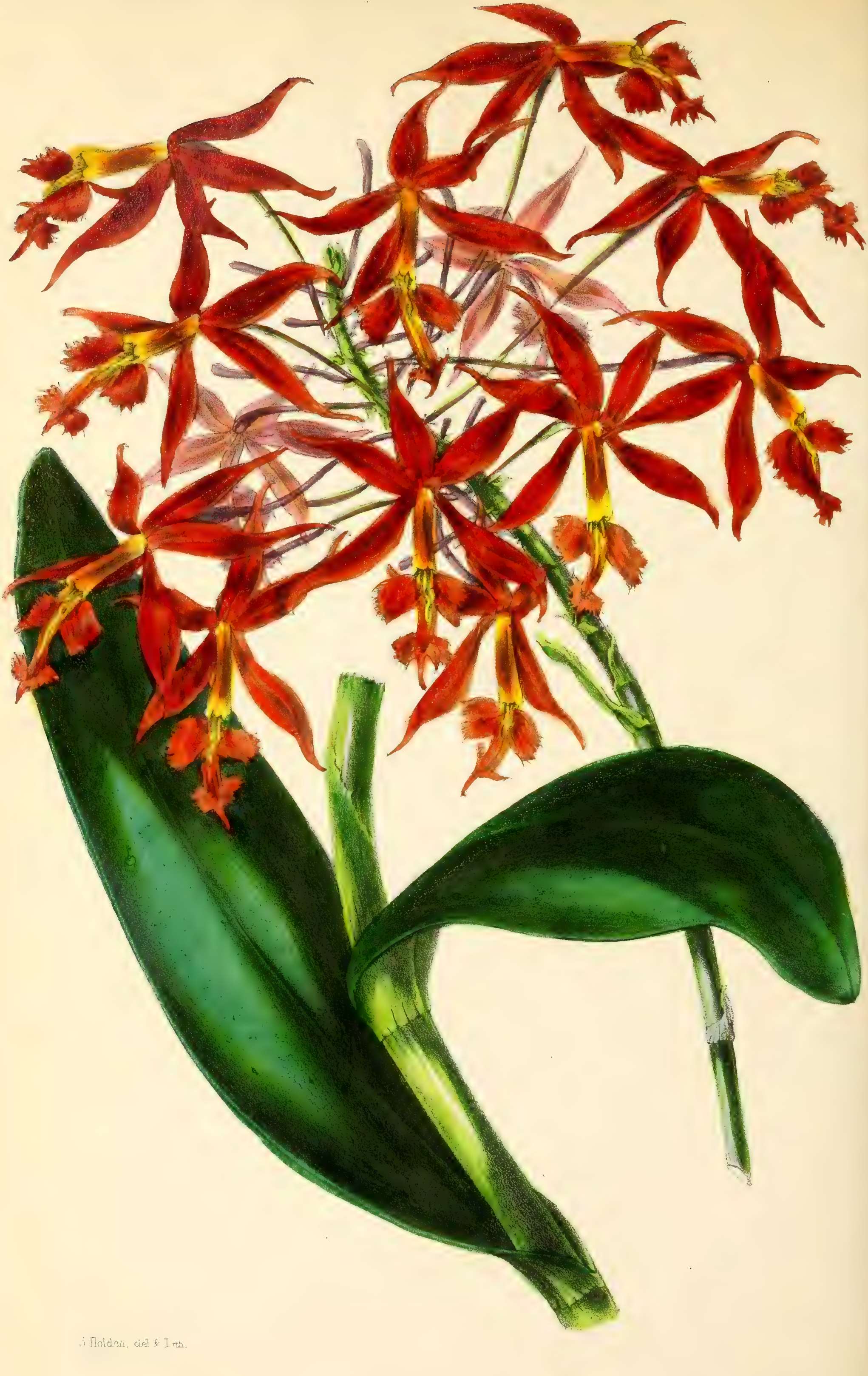
Where annuals are required to decorate the greenhouse, the balconies, or rooms of the dwelling-house, the sides of flights of steps, the orangery, &c., during summer, a few of the best of those which are taken out in thinning the patches in the borders should be potted, and kept in the open air or in a frame. This will save the trouble of raising them in frames.

As soon as any plants are transferred to the open beds or borders, they should at once be prepared for occupying their destined position. If they are to trail over the ground, let them be pegged down, and encouraged to do so. And if they are to grow erectly, let them be immediately staked and supported. No Dahlia should have more than one strong shoot ; and as this grows up, it should continually be kept fastened to its stake, that high winds may not break it, nor a long tendency to a wrong position cause it, when properly fastened, to have an unnatural appearance. As the stems of Dahlias and some other plants swell considerably during their advancement, they must be tied loosely at first, and often examined afterwards to see that the bands do not cut them.

From the wetness of the season, it is most likely that Verbenas and all allied plants will grow rapidly and vigorously ; so that it will be necessary to keep the extremities of their shoots continually pinched off, in order to keep down their luxuriance, and to make them branch and flower more profusely. By continuing to remove the early flowers for a time, the number, fineness, and durability of the later ones will be greatly augmented.

In the management of house plants this month, there should be some alteration from that recommended in our last calendar. The sashes will now have to be opened more liberally, as well to lower the temperature, as to give the young wood the benefit of a good current of air. The frames and pits lately filled with half-hardy plants now being vacant, a quantity of the best dwarf greenhouse species should be transferred to them, where they can have any peculiar attention that may be needful ; and their removal will give the rest more space to stand in, so that they will receive an ample supply of air and light. Any tribe, such as Pelargoniums, that is yet in flower, should be shaded, to prolong their blooming season ; and Heaths should likewise be shaded at this time, whether blooming or otherwise. Where a show-house for blooming specimens is kept, this ought always to have a thin canvass shading ; for the flowers will thus last much longer, and the house will be far more comfortable to enter.

All plants in pots will require a great deal of water at this time ; and those of luxuriant habits should be watered with diluted liquid-manure. Hydrangeas that are blooming, Coxcombs, Balsams, Gloxinias, &c., are of this class. Syringing should be almost daily practised in the Orchidaceous-house, the stove, and the greenhouse ; and climbers, in any of these places, should be duly trained and kept in order. Propagation may still be carried on.



J. Holden, del. & Lith.

Epidendrum Schomburgkii

EPIDÉNDRUM SCHOMBÚRGKII.

(Mr. Schomburgk's Epidendrum.)

Class.
GYNANDRIA.

Order.
MONANDRIA.

Natural Order.
ORCHIDACEÆ.

GENERIC CHARACTER.—*Calyx* wanting. *Corolla* with five oblong spreading petals. *Labellum* without a horn at the base, tubular, embracing the column, with a broad erect plate. *Column* terete, placed below the germen, gibbous. *Anthers* concave. *Capsule* oblong, three-sided, one-celled, three-valved. *Seeds* numerous, extremely minute, roundish.

SPECIFIC CHARACTER.—*Plant* epiphytal. *Stem* slender, a little spotted. *Leaves* distichous, oblong, obtuse, with blood-red spots. *Sepals* and *petals* linear-lanceolate, acute, equal, very spreading. *Column* club-shaped, elongated. *Labellum* three-lobed, thick at the base, with an elevated line in the middle; lateral lobes broad, roundish, lacerated; middle one cuneately triangular, curled, acuminate.

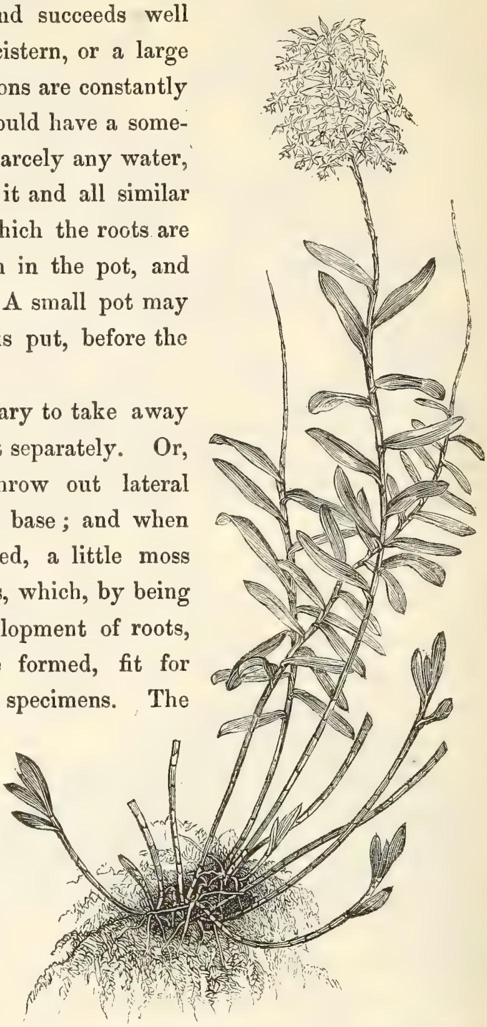
THE genus *Epidendrum*, as we have often intimated, is naturally separable into two classes, if habit be taken as the ground of distinction. There is the division with pseudo-bulbs, and comparatively long stout stalks to their scapes of flowers, which issue either from the base or summit of the pseudo-bulbs; and there is the tribe which have stems, generally long and slender, with dense bunches of blossom on shorter stalks.

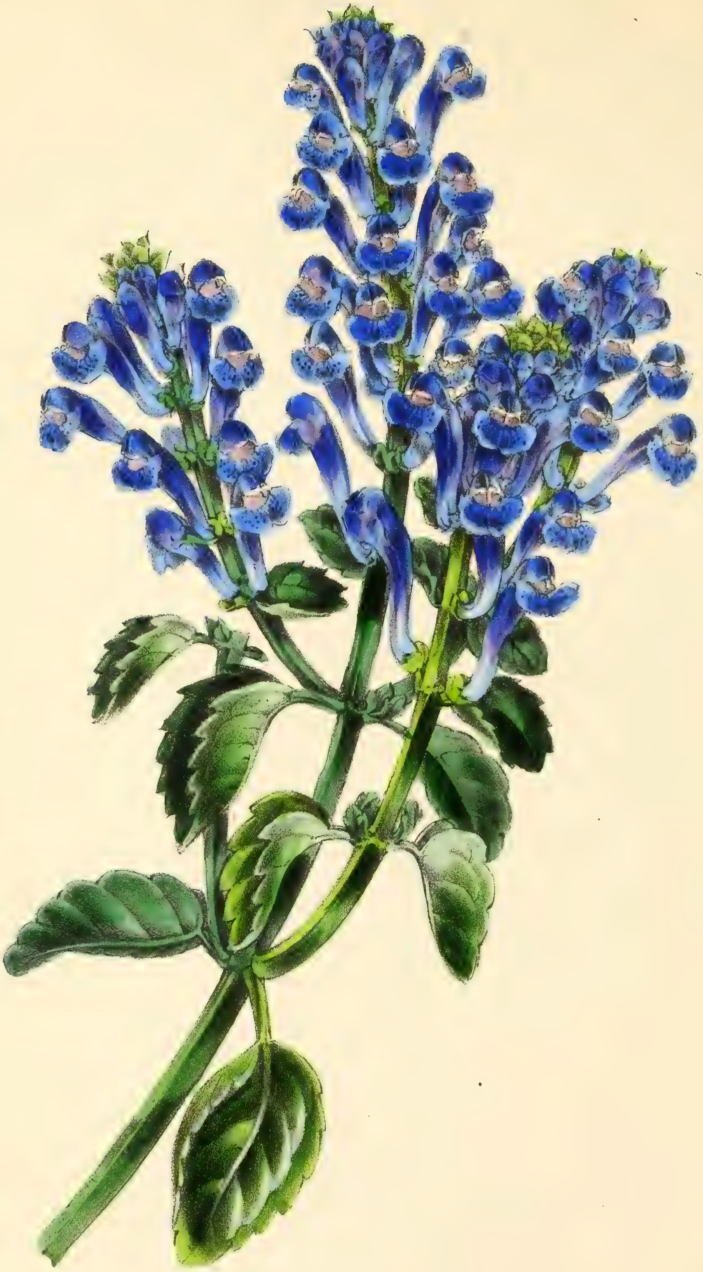
To the last-named group belongs the species before us. The rest of its allies have, however, for the most part, greenish or pink flowers, wanting showy colours in the one instance, and having insufficiently large blossoms, or heads of them, in the other, to render them ornamental. This plant is, therefore, quite the gem of its class; and, with *E. cinnabarinum*, a very nearly related kind, stands among the more interesting and beautiful of the order. It has far more ample clusters of bloom than the majority of caulescent Epidendra, and the individual flowers are much larger than those of the best species, such as *E. ellipticum*, &c.; while their colour is a deep rich red, with a tinge of yellow in the centre. They remain perfect, too, for a considerable time after expansion, being generally open from one to two months.

It was introduced by Mr. Schomburgk from British Guiana a few years back, and sent to Messrs. Loddiges, with whom it has been frequently in bloom, and from whose noble collection our drawing was made in the month of July, 1841. It is now, likewise, in most other large nursery establishments.

Messrs. Loddiges cultivate it like *E. ellipticum* and the other caulescent species, by planting it in a pot filled with rough heath-mould and potsherds. It seems to flourish in a warm moist house, and succeeds well where it can be suspended over a cistern, or a large body of water, from which exhalations are constantly going forward. In the winter, it should have a somewhat drier spot, and will require scarcely any water, if kept in a cool house. In potting it and all similar plants, the base of the stem, from which the roots are emitted, should be placed rather high in the pot, and above the general level of the soil. A small pot may be inverted in the one in which it is put, before the soil is introduced.

To propagate it, it is only necessary to take away carefully one of the stems, and pot it separately. Or, sometimes the older stems will throw out lateral branches, which form roots at their base; and when the tendency to do this is perceived, a little moss should be wrapped round such parts, which, by being kept moist, will encourage the development of roots, and young plants will speedily be formed, fit for detaching, and treating as separate specimens. The subjoined wood-cut shows the habit of the species.





Scutellaria japonica

SCUTELLÀRIA JAPÓNICA.

(Japan Skullcap.)

Class.
DIDYNAMIA.

Order.
GYMNOSPERMIA.

Natural Order.
LABIÀTÆ.

Generic Character.—See p. 99 of the last number.

Specific Character.—*Plant* apparently a small evergreen shrub. *Stems* quadrangular. *Leaves* opposite, petiolate, somewhat spoon-shaped, serrated, obtuse. *Flowers* in terminal spikes. *Corolla* with a long tube, deep blue, spotted on the lower lip and in the throat.

We figured last month a very interesting species of this genus, which was remarkable for having brilliant deep scarlet flowers; and we now bring forward another kind, which, though departing less from the usual character, produces extremely beautiful blue blossoms, is a pleasing dwarf object, and appears to be either hardy and fit for growing in the open borders, or nearly so, and requiring only the protection of a cold frame in winter.

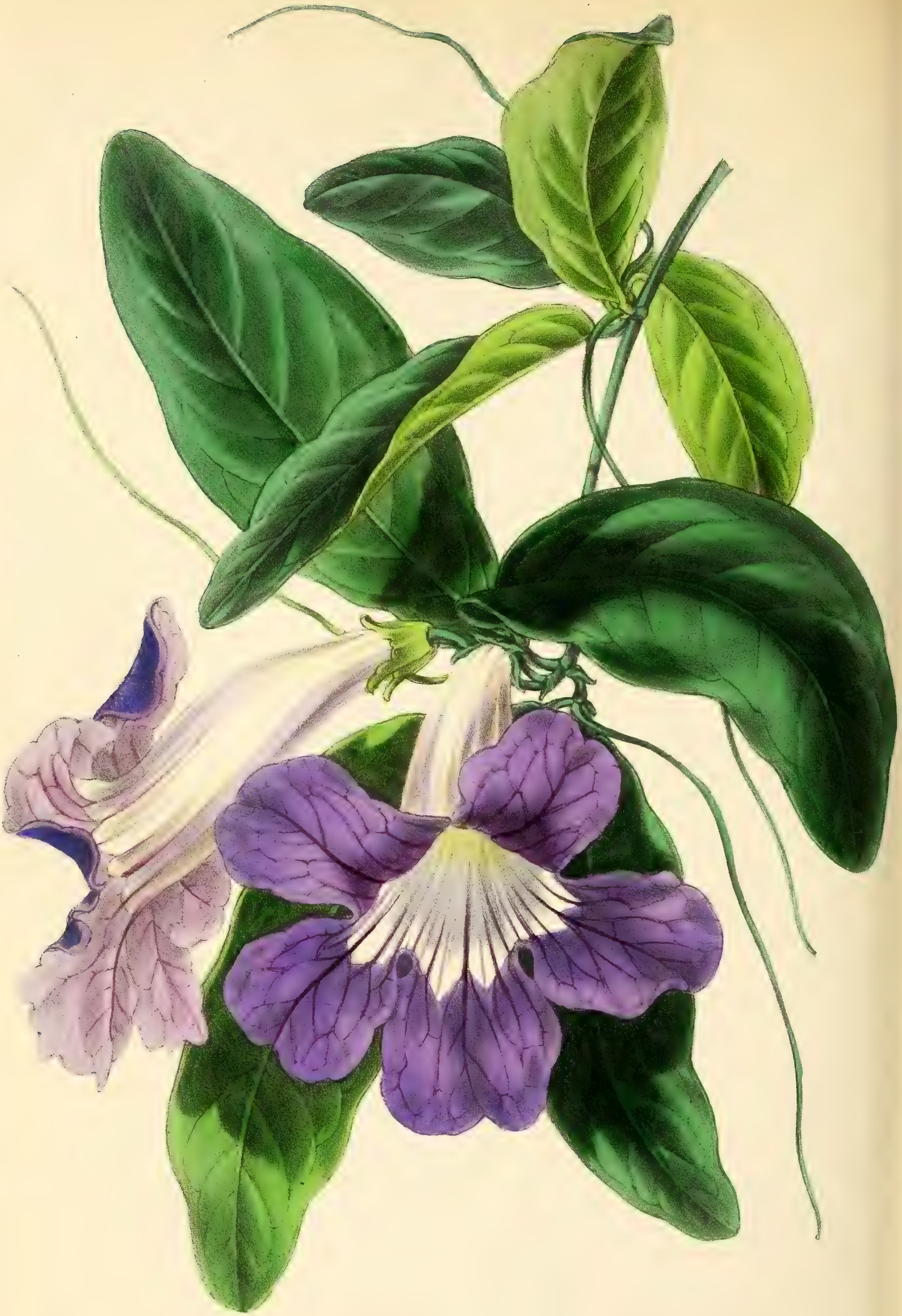
S. japonica is one of those pleasing little plants which grow only four or five inches in height, are of a partially trailing character, and bear a profusion of showy blossoms throughout the whole of the summer. The blossoms are produced in comparatively large spikes, at the end of the principal or lateral branches, and besides being of a handsome blue tint, are prettily spotted in the throat. They are somewhat like those of a delightful little plant which is so common on our hedge-banks, and is therefore scarcely noticed—the Ground Ivy; only they have a much longer tube, and are arranged with greater effect.

As its name asserts, it is a Japan plant, and has been in the nursery of Messrs. Rollisson, Tooting, for three or four years. We had our drawing prepared there in June 1841. It is probably one of the many plants brought to light by Dr. Siebold, during his travels in Japan. From its native country, the probability is that it will be found hardy enough to endure our winters.

At Messrs. Rollisson's it has been treated as a frame plant, and grown in a pot, amongst Alpines and such like species, being exposed through the summer months, and merely placed in a cold pit during winter. It is an excellent plant for mixing with a potted collection of Alpines, being of small dimensions, great beauty, a most liberal bloomer, lasting in flower a great length of time, and having blue blossoms, which are not very common in that class. It may also be cultivated with extreme ease, not being at all delicate, and simply requiring the commonest soil.

As a border plant, however, it will attain to a higher perfection than in a pot, and may possibly prove useful for planting in beds or patches. These it would cover with bloom throughout the summer.

It can be increased by cuttings, or by division; or, if a small portion of earth is drawn up around the partially trailing shoots, so as almost or wholly to cover them at the bottom, these will most likely root in the manner of Verbenas, and may afterwards be taken off. It will be desirable to test its hardiness by leaving a plant or two exposed in the following winter.



Holden, del. & lith.

Bignonia picta

BIGNÒNIA PÍCTA.

(Streaky-blossomed Trumpet-flower.

Class.
DIDYNAMIA.

Order.
ANGIOSPERMIA.

Natural Order.
BIGNONIÀCEÆ.

GENERIC CHARACTER.—*Calyx* five-parted, cyathiform. *Corolla* with a campanulate throat, five-lobed, ventricose below. *Pod* two-celled. *Seeds* membranaceous, winged.

SPECIFIC CHARACTER.—*Plant* an evergreen shrub. *Leaves* simple and conjugate; leaflets oblong and obovately oblong, acute, slightly undulated. *Peduncles* two-flowered. *Calyx* campanulate, with setaceous teeth. *Corolla* with spreading, oblong, obtuse, partially undulated lobes, and painted with violet-coloured veins.

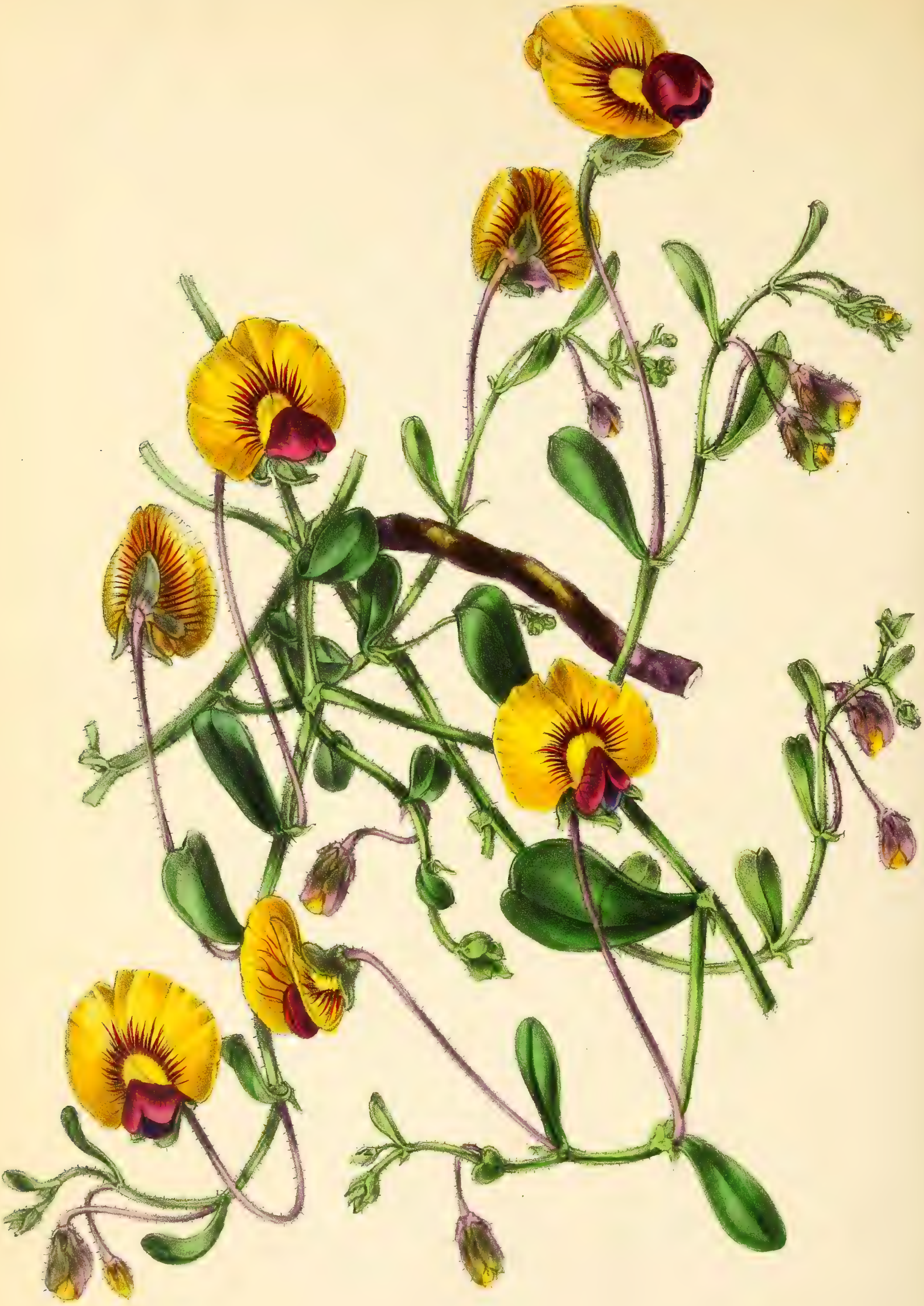
THIS handsome species has, we find, been in British collections since the year 1823; but, like many of its allies, it is so shy in developing its flowers, that several of our friends who have cultivated it for years have never seen a blossom. Plants at Messrs. Rollisson's, Tooting, however, perfected some blossoms last year in a stove; and the same specimens have flowered again in the present season. Our figure was prepared from these in the month of April last.

The plant is by no means of a rambling habit, for, although its branches extend to a considerable length, it is so well clothed with evergreen foliage as to present, at all times, an agreeable appearance. The flowers seem to come out in pairs, towards the upper ends of the shoots, and are individually of a large size, being almost three inches in breadth. They are of a deep lilac or purplish colour, with a whitish throat, and many streaks of a darker tint throughout.

In the catalogues, the plant is marked as being an inhabitant of South America; and Dr. Lindley suggests, in the Botanical Register, that it is "probably a Buenos Ayrean species, though of this there is no certainty." Speaking of the whole genus, the same gentleman justly says that "people have no notion of the rich and varied colours, or of the graceful forms, that are to be had among its many species, not to mention the magnitude of its flowers. All the tropics contain them; and the attention of travellers in those countries should be particularly directed to sending home their seeds, which soon come up."

Although, when improperly managed, it is next to impossible to get *B. picta* to bloom; yet if rightly grown, and suffered to reach its maturity before it is expected to flower, it blossoms freely enough. Either a warm greenhouse or a cool stove will suit it. Still, it is perhaps the best plan to keep it in an intermediate house, or a kind of close conservatory. In such a situation, it only needs to be placed in soil that is not shaded, or liable to be saturated with moisture, or too far from the glass, or very deep, or imperfectly drained, and it will speedily arrive at a flowering condition. But, when it has grown sufficiently large to be capable of bearing flowers, the great point with it, as with others of the genus, is to refrain from pruning it, and let the branches take their natural course, unless they become too straggling. Under such management it will not fail to flower; and it matters little whether it be planted in a pot or in a bed of earth. The compost suitable for it is quite an ordinary one, such as any mixture of heath-mould and loam, in which the latter constitutes the main part of the soil.

About May or June is the fittest season for propagating it, and it should be raised from cuttings, which will need bottom-heat to start them.



S Holden. del. & Lith.

Chorozema spartioides.

CHOROZÈMA SPARTIOÌDES.

(Broom-like Chorozema.)

Class.
DECANDRIA.

Order.
MONOGYNIA.

Natural Order.
LEGUMINÒSÆ.

Generic Character.—*Calyx* nearly five-parted, two-lipped; upper lip bifid, lower one three-lobed. *Corolla* with a ventricose keel and short wings. *Style* short, uncinate. *Stigma* oblique, obtuse. *Legume* ventricose, one-celled, many-seeded, sessile or sub-sessile.

Specific Character.—*Plant* an evergreen shrub. *Branches* irregular, slightly drooping. *Leaves* few, sessile, rather spatulate, retuse. *Peduncles* very long, axillary. *Corolla* large; *standard* yellow, deep brown near the base, with streaks radiating from thence; *wings* purplish.

It was with some hesitation that we were led to regard the specious plant now figured as identical with the diminutive object represented in the Botanical Cabinet of Messrs. Loddiges under the name of *C. spartioides*,—the latter appears so exceedingly small; and we are assured by those gentlemen that their plant never grew higher than three or four inches, and always seemed peculiarly small and slender. Nevertheless, though we are not sure that our plant may not be a superior variety, we feel satisfied that it belongs to the species, as well from the form of its foliage as the colours of its blossoms.

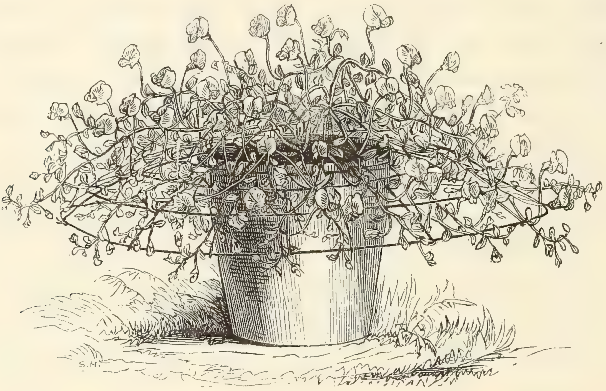
We may remark here, too, that the specimen from which our drawing was taken, had been highly cultivated; and exhibits a strength and luxuriance which are not very common to the species. Indeed, we hold this point before us as a principle; never figuring a plant from an imperfectly grown specimen when it is possible to procure it in a better-grown state; and hence it is sometimes most erroneously considered that our plates are overdrawn or exaggerated likenesses of the objects we depict.

In the present instance, we have only been able to show a portion of the specimen. It grows up with a short stem, and then spreads out its branches horizontally, or in a partly drooping style. These branches are peculiarly irregular and zigzag; but when the plant is nicely cultivated, it forms a low bush, not more than three inches above the soil, compact, and, during the blooming period, very showy with its fine yellowish flowers. It was raised from New Holland seeds several years ago, and is a plant that commences blossoming about the month of April, and continues nearly all the summer.

This is one of those fine rooted plants which are easily injured, want frequent attention in their culture, and require to be managed well, or they are never worth growing. It should be potted high in the centre of the pot, in a compost of very fibrous and open heath-mould and loam, with the base of the stem, whence the roots proceed, left a little exposed. The shoots of the young plants must be kept duly shortened, while they are advancing; for it is a species which, if not thus pruned, will straggle, become very weak and slender, and have a displeasing appearance. When the specimens are two years' old, however, the pruning may be almost wholly left off, as it is near the extremities of the shoots that the flowers are borne. After this time, the plant may be pruned in the winter. It will flourish in any light airy greenhouse.

The species is multiplied, somewhat slowly, by cuttings, which should be taken from the branches that do not seem inclined to flower much. If they show any disposition to bloom, even after they have formed roots, the flower-buds should be timely taken away. It is extremely injudicious, in all cases, to suffer small plants to flower.

Messrs. Young, of the Epsom nursery, furnished the subject of our drawing in March, 1841. The wood-cut below gives its habitude.



GARDENING AS A SCIENCE.

No. VI.—MANURES AND THE FIXATION OF NITROGEN.

In the article No. V., a few facts were adduced concerning the effects observable on the application of various decomposable substances, which we term *Manures.* The subject is by no means exhausted;—so far from it, that it appears we really know but very little of leading philosophical principles. In every quarter we not only perceive that attention has been directed to the preparation and advertisement of new manures as a source of trading emolument, but the press teems with the conjectural theories of numerous writers whose experience scarcely, perhaps, amounts to the observation of a few horticultural phenomena.

Still, inquiry is alive and active, and therefore we may be assured that science will extend, and practical improvements follow.

We shall shortly have occasion to allude to the authority of Liebig, who has pioneered the way to all the modern theories that have been ushered to light since the publication of his *Organic Chemistry*, but previously must recur to that great principle of manuring which instructs us that every product of vegetable organized life must be placed either by nature or art within the sphere of the plant's attraction; and therefore if we propose to obtain luxuriant vegetables, perfect in all their parts, we must apply manures which contain, in one form or other, all the elements of those vegetables. Now, leaves of all descriptions, as being parts of plants, must of necessity comprise the required elements, and as such we uphold them to be the best and safest of all manures.

No one can take up a periodical of agriculture or gardening, without acquiring some ideas of what are the received opinions of the day concerning vegetable structure and function. He will see that most plants and their products develop, when decomposed by chemical processes, the elements which we call oxygen, hydrogen, carbon; and that some others yield a quantity of the gas called nitrogen. The leaves of trees in a state of decay, produce, in every instance, the three first-named elements, while those of the cabbage tribe, and similar strong-smelling herbaceous plants, afford evidence of the presence of much nitrogen. Here then we find all the components of organic structure, and therefore are justified in recommending half-decomposed leaves upon philosophical principles—that is to say, from the induction of facts.

We are aware that they who advocate the super-excellence of stable manure will exclaim against the use of leaves; we must therefore appeal to experience. In melon-growing, it is common to recommend pure, virgin, strong *loam* as a staple, and this also to be trodden down to a solid bed of almost impenetrable texture. *Melons,* doubtless, have been produced of fine quality under such treatment, but we are equally sure that they are grown with undeviating success by a process dissimilar as possible to the one just alluded to. A gardener whom we have known for more than ten years once sent a melon to the Royal table, the weight of which was above 24lbs. He has now a range of pits of fifteen lights each, seven feet long, the slope of which to the south sun is moderate, falling from the back nine-inch wall, three feet high, to the curb in front, about ten inches above the ground level. The earth was removed from the inside to the depth of at least a yard, and this space was filled with tree leaves collected from the park and shrubberies, and in the first instance trodden compactly as a bed to produce bottom-heat. As the heat declined more leaves were added; and thus, by degrees, a great mass of semi-decayed vegetable matter was produced, which has never been removed.

Many years have now elapsed, but in this earth melons were and have been annually planted for the later crops, and no heat of any kind is applied internally or externally. After the removal of the melons, the earth is exposed to the weather for a few weeks, then manured, digged, and planted, with the strongest plants of Keen's Strawberry, obtained from the early summer's runners. With the plants a portion of garden earth is of course introduced, and that contains more or less of *loam.* The strawberries are planted in rows, a foot apart, and six inches asunder in the rows.

We do not dwell upon the productiveness of the strawberry so treated, year after year, nor of that of the melons, which follow in routine, it being our object to impress the truth, that the pure vegetable manure of leaves contains all the essential matters that can be assimilated by the vital principle of most plants. As to the small portion of loam which is introduced, it consists, as we have before stated, of nearly insoluble metallic oxides, and therefore confers texture and consistence only to the leafy compost. Leaves, moreover, do not introduce any common weeds; some fungous matter may be, and is, generated, but none of the weeds of the farm with which the land is covered by the use of common stable and yard manure.

We are now led to the subject of specific individual manuring, which, were it understood, would produce effects of the greatest importance to farming and horticulture. In Liebig's work, there is an appendix at page 213, upon "*The Manuring of the Soil in Vineyards:*" it is worthy of much attention.

The writer, M. Krebs, of Secheim, says, "that nothing more is necessary for the manure of a vineyard than the branches which are cut from the vines themselves.

"My vineyard," he adds, "has been manured in this way for eight years, without receiving any other kind of manure, and yet, more beautiful and richly laden vines could scarcely be pointed out. I formerly followed the method usually practised in this district, and was obliged in consequence to purchase manure to a large amount. This is now entirely saved, and my land is in excellent condition.

"The foliage falls from trees in a forest only when they are withered, and they lie for years before they decay; but the branches are pruned from the vine in the end of July or beginning of August whilst still fresh and moist. If they are then cut into small pieces and mixed with the earth, they undergo putrefaction so completely, that, as I have learned by experience, at the end of four weeks not the smallest trace of them can be found."

From the authority of "Henderson's History of Wines," we also find that, "The best manure for vines is the branches pruned from the vines themselves, cut into small pieces, and immediately mixed with the soil. These branches were used as manure, long since, in Bergstrasse. M. Fraunfelder says, 'I remember that twenty years ago, a man called Peter Müller had a vineyard here which he manured with the branches pruned from the vines, and continued this practice for thirty years. His way of applying them was to hoe them into the soil after having cut them into small pieces. His vineyard was always in a thriving condition—so much so, indeed, that the peasants speak of it to this day as a wonder.'"

Without vouching for the facts above cited, it can be affirmed that ever since the publication of them by Liebig, we have practised the method recommended, and have had convincing proof of the rapid decomposition of the green prunings, and no other manure has been applied to the vines under glass,—yet their growth is richly luxuriant.

If it can be experimentally shown that the leaves and other herbaceous portions of any plant usually thrown aside as rubbish are specifically appropriate to the individual itself, what a valuable discovery will be made! The vine, for instance, requires frequent prunings, and to a very great extent; peach and nectarine trees are disbudded and repeatedly pruned; the prunings contain all the peculiar products of the several trees,—and these, if deposited in the ground within reach of the roots *while in a green state*, may be rationally supposed to develop all the elements that Nature has rendered suitable to the constitution of each. The doctrine is theoretical, but no one can impugn it till he have brought it to the test of experiment.

All artificial manures contain elements more or less foreign to any individual; but that cannot be said of the material now alluded to: we therefore feel justified in urging a fair and impartial trial of a plan which is safe and very simple in itself. Care will doubtless be required so to introduce the prunings as not to wound the roots of a tree; but it will not be necessary to move the earth to any great depth, and therefore the danger of injury by the tool is not worth mention. It is notorious that the roots of fruit-trees are but too apt to penetrate into a bad subsoil; if then we can introduce a perfectly safe and appropriate substance, rather above the roots, and only just so deep as to ensure its decomposition under the surface-soil, the rootlets will be attracted thereby, and revel in the enjoyment of purely nutrimental elements, void of those antagonist principles which are inimical to the health of the plant.

The *fixation of nitrogen* is a question which still occupies much of the attention of our modern writers. The characters of this important principle of atmospheric air have been already alluded to under their proper head; what we want to know, or rather what many persons are solicitous to ascertain is, how, and by what agency, the gas called nitrogen and azote becomes united with the other more general components of living vegetable bodies. Before reference to any theory, it must be clearly understood that the presence of nitrogen is essential in all the processes of fermentation; hence it is always found in wheat, gluten, and the leven of fruits—of the grape particularly. Nitrogen is also one of the chief ingredients of the volatile alkali called ammonia.

Now, the theory of the great Liebig may be adduced in a very few lines:—he inquires (p. 69, 70)—"How, and in what form, does nature furnish nitrogen to vegetable albumen, gluten, fruits, and seeds?" The solution of this question he finds very simple. "Plants grow perfectly well in pure charcoal, if supplied at the same time with rain-water. Rain-water can contain nitrogen only in two forms, either as dissolved atmospheric air or as ammonia. Now the nitrogen of the air cannot be made to enter into combination with any element except oxygen, even by employment of the most powerful chemical means. We have not the slightest reason for believing that the nitrogen of the atmosphere takes part in the processes of assimilation of plants and animals; on the contrary, we know that many plants emit the nitrogen which is absorbed by their roots, either in the gaseous form, or in solution in water. But there are on the other hand numerous facts, showing that the formation in plants of substances containing nitrogen, such as gluten, takes place in proportion to the quantity of this element which is conveyed to their roots in the state of ammonia, derived from the putrefaction of animal matter."

This is the theory of Liebig, which by some is stoutly combated. In truth, we know not what nitrogen is, though we can prove that it constitutes four-fifths of the atmospheric volume. It may be simple and elementary, yet the conjecture may be hazarded as far more probable, that itself is a *compound*, and therefore decomposable by organic life.

Ammonia is certainly traceable in rain-water; but it is extremely difficult to determine whether the atmospheric vapours receive it altogether from the putrefaction of dead bodies, and of the decomposing masses of manure, &c., or in a certain degree from the quantity of soot which passes into the air.

Be this as it may, rain-water certainly owes its softness not only to the absence of the chalk, but to the existence of a small quantity of that volatile alkali called *ammonia*.

It therefore appears of little consequence, whether the nitrogen be derived from the air, or by the introduction of ammonia with rain into the roots; and subsequently, from the decomposition of that alkali in the vegetable cells, whereby its nitrogen and hydrogen are separated, and become united to other substances in order to form compounds, specific to each individual plant.

While we admit that Liebig may justly claim the presence of nitrogen in the ammonia, as one prime source of its fixation in vegetable tissue, we see no reason to believe that the air itself may not be made to yield a supply from the strong affinities brought into play by the living principle. At present, while our ignorance remains so profound, we must be content to know facts that exist, and that nitrogen is frequently a necessary constituent of vegetable bodies.

LEAF-MOULD FOR EXOTICS.

One of the most prominent characteristics of horticultural literature in the present day, is the examination and discussion of those agents in soils which affect the growth of plants, either chemically or mechanically. The fact that no plant can flourish unless its roots have a free development, and that no condition, however suitable, in which the branches and leaves may be placed, could, of themselves, suffice to keep the roots vigorous, and the whole specimen healthy, ought long ago to have been more distinctly recognised and acted upon by cultivators. Now that attention has been drawn towards the matter, however, it is desirable to meet this freshened inquiry, by pointing out a few principles which apply to the subject; and likewise to furnish some suggestions as to the best materials for improving the texture and properties of earths, whether for delicate plants that will thrive out of doors, or for those that require more or less of artificial protection and warmth.

To deal first, then, with principles,—since all peculiarities of practice ought to have a sound basis of that kind,—we would refer to the true office of soils in the economy of vegetation. Earths are of value to plants in many ways. They afford a medium, by the spreading of the roots through them, for sustaining plants in their right position. They shelter the roots from light, which would injuriously alter their texture and nature; and from the full influence of the air, which would generally prevent the exercise of their functions. At the same time, they are so permeable to air, and so acted upon by light, that the fluids they contain are continually being changed and modified.

But the chief circumstances in soils which affect plants are the extent of their porosity, in admitting a circulation of airs and fluids; their yielding character, in respect of allowing the roots to shoot readily through them; and their chemical constituents, with reference to the supply of proper nourishment. These must of course be varied, according to existing peculiarities of situation, or of the species cultivated; but as a common rule, especially in regard to potted plants, it may be observed, that an open soil, through which air and fluids can freely pass without stagnating, and which the roots can easily pierce, is as essential to superior culture as it is to have a due amount of light, &c. for the leaves and branches.

The texture of soils has been hitherto far too much disregarded in the culture of exotics; and it seems to have been forgotten that there is an unalterable tendency in small particles of earth to lie close to each other, and even to consolidate, when brought into contact, thus either throwing off the water from their surface, or holding it too long in the mass. The sifting of soils, therefore, in order to use the finer portion, has been a great evil; and the addition of sand, with the view of rendering them more porous, has rather augmented the mischief; for every one knows how difficult it is to get fluids to circulate among sand, when the latter is at all dry. Hence the more recent practice, educed from the known laws of nature, that the larger the particles of matter brought together, the greater will be their interspaces and general porosity, while they will become proportionately less liable to amalgamate, is to employ those earths, for plants in pots, which are made up of the coarsest, and lightest, and least adhesive ingredients, and to mix with them similar pieces of stone, potsherds, &c., to increase and maintain their porosity.

If we might illustrate our meaning by a bold metaphor, we should say that all soil intended for potted exotics should be literally like a sieve, or a piece of canvass or netting, through which the water might flow as soon as it was poured on it; only that each particle should absorb just enough to moisten it throughout. This we should consider the perfection of a soil, in relation to its mechanical properties; and this is unquestionably indispensable to the attainment of the cultivator's highest objects.

Still, there are several barriers to the preparation of such a compost, on account of the necessity of providing for the plant's sustenance; adequately rich earths being ordinarily somewhat adhesive. Loam, in its more nutritive state, is commonly inclined to be clayey, or at least, rather too retentive of moisture, and disposed to adhere too much into a mass. When very light and open, again, it is often sandy and poor. Heath-mould, on the other hand, is sometimes so full of siliceous matter, and so free from vegetable fibre, that it is the worst of all earths for remaining porous, and will soon settle down into a sour ball, either impervious to water, or entirely saturated; whereas, when it is nearly all fibre, and destitute of sand, thus constituting the most easily drained of soils, it will only suit those plants which require very little nourishment from the earth, such as Heaths and Orchidaceæ.

Taking all these matters into account, we have gained the conclusion that leaf-mould, used alone for some plants, and in conjunction with loam or heath-soil for others, offers so many advantages, that every person having a garden should save all the leaves they can command, and appropriate them specifically to the purposes of cultivation, particularly with plants that are grown in artificial circumstances. In the first place, it is so porous that we have never seen it bind into a mass; and the pot must indeed be badly drained in which it holds an undue quantity of moisture. Secondly, it is much richer than heath-soil; and contains just enough of nutriment to bring the majority of shrubby plants to a high degree of luxuriance, without diminishing their production of bloom. And thirdly, though so open, and so well adapted to let the water pass away, there is no soil that is sooner permeated by moisture, or that gets so thoroughly and efficiently wetted by any application of fluid.

We proceed to speak primarily of its employment in a simple state. The growers of terrestrial Orchidaceæ, as the species of *Bletia*, *Phaius*, *Calanthe*, &c., are by no means unanimous in the recommendation of any particular soil; many preferring the heath-mould which they apply to those of the epiphytes which are cultivated in pots, and a few choosing rather to give them a loamy earth. Undoubtedly, some of the finer kinds have been found to succeed in loam; but there is much danger in the use of this material, on account of its liability to bind or to become saturated in the alternations to which it must be exposed. Yet, wherever it has been tried, and a perfect drainage has contributed to its success, the plants grown in it have invariably been raised to an unusual height of richness and splendour; thereby proving that they need something more nourishing than heath-mould, or, at any rate, that a stronger soil greatly improves them.

By some strange inconsistency, when heath-mould has been used for the same kind of plants, instead of being prepared in lumps, and of a fibrous nature, as for the epiphytes, it has mostly been reduced considerably, a more sandy sort being selected, and scarcely any drainage mingled with it. Passing by this, however, the insufficiency of nutriment in heath-mould may be fastened on; and, as we have before shown that loam is not an appropriate material, we come to advocate the employment of leaf-mould universally for terrestrial Orchidaceous plants. It appears to us to possess every requisite quality for keeping them in health at all seasons, and also for making them greatly superior, both in foliage and inflorescence, to the condition in which they are generally seen.

We include, in the preceding observations, the more hardy of the species; for example, the North American Cypripediums, the New Holland kinds, and the most interesting of our indigenous species. All the difficulties in managing these would, we believe, be at once dissipated, were they to be planted in a well-drained border of leaf-mould, in a shady place.

It allows, too, of much question, whether a portion of the more epiphytal species, which are now grown in baskets and pots, filled with heath-mould or sphagnum, might not be really benefited by being planted in leaf-soil. The thought has repeatedly occurred to us, that epiphytes have yet been very little more than grown, not *cultivated;* and that something might be done to ameliorate them to the same extent to which the beautiful shrubs of our greenhouses and stoves have been improved. Should this be attempted—and we hope it will—there seems no way in which such fine results are likely to be obtained, as by the application of leaf-mould instead of heath-soil. And it must be remembered that many epiphytes actually locate themselves spontaneously in the cavities of old trees, where there is a quantity of decomposed woody matter; so that, this being very similar to leaf-mould, there is scarcely a departure from nature in the use of the latter.

Another class of plants for which leaf-mould is the fittest of all soils, is the beautiful and half-epiphytal genus *Æschynanthus*. The interesting species of this genus will grow in baskets of moss, and even on logs of wood covered with moss; but they are more frequently planted in a compost of heath-soil and loam, and treated as pot plants. A few months back, we witnessed two of the species cultivated in leaf-mould, and the difference in their aspect, as compared with others in the soil above-named and in moss, was striking in the extreme. The leaf-mould was evidently the most suitable for promoting luxuriance; and as it can be dried with greater facility in the autumn months—and this is the secret of blooming the plants—it must be altogether the most appropriate. What we mean by being dried is, such an exposure to the light, and such a partial administration of water, that the plants shall just be kept from flagging during July and August; though, perhaps, sufficient exposure in a dry frame will of itself produce the desired effect, without any material decrease in the supply of water.

A tribe closely allied to that just noticed, and demanding very nearly the same treatment, will find its type in *Columnea Schiediana*, *splendens*, *scandens*, &c. These plants, whether grown in baskets for suspending, or ordinarily in pots, require a better soil than heath-mould, and one more open than loam. Leaf-soil is, therefore, in all respects, best for them.

The beautiful race of Ferns, again, so elegant in the forms of their foliage, and its lively green hue, and so useful for placing in shady situations, where few other plants will thrive, is, from growing naturally in the crevices of rocks, where a scanty portion of vegetable mould has been deposited, or beneath dense woods, all the surface earth of which is composed of decayed leaves, far from being easy to suit as respects a compost. Neither loam nor heath-soil, nor a mixture of both, is exactly adapted to them; and while some perish in one of these, many are greatly stunted in the other. Leaf-mould alone is what should be used for them; and that it has not already been the chosen material, is the more surprising, because, as we have hinted, they are commonly met with growing in it, or in something very like it, spontaneously.

Until a comparatively recent period, the greatest mistakes have been current about the soil most adapted for the Epiphyllous group of Cacti. We allude to all the species of *Epiphyllum*, and to *Cereus flagelliformis* and *speciosissimus*. It has been imagined that, in common with the dwarf and round-headed Cactaceæ, of which the species of *Echinocactus* and *Mammillaria* are examples, these plants would only luxuriate and flower finely in a compost of which brick rubbish constituted a principal ingredient. The fact is, however, that some of them are partially epiphytal, and that they all need an enriched soil, though they prefer one of a very open nature. In place, therefore, of putting them in a sterile earth, or one in which much manure exists, or in moss, we think it would be altogether better to cultivate them in leaf-mould. The richness and porosity they require would thus be quite adequately furnished.

What we have thus affirmed of Cacti, applies equally to such plants as the Echeverias, Pereskias, *Euphorbia splendens*, and probably *Jacquiniflora;* and we have scarcely any doubt of its reference, likewise, to the pretty species of *Mesembryanthemum.* Not a few of our readers will be familiar with the effects of a manured border on the species of the last-named genus; and they too generally present a starved appearance in consequence of having a poor soil, when they might be both luxuriant and fertile in leaf-mould.

To descend to the hardy department, there is a large tribe of plants, rather vaguely classed under the head of Americans, for which heath-mould is deemed requisite. Rhododendrons and Kalmias are illustrations. If at all exposed to the influence of a summer sun, however, and particularly if the weather should happen to be dry in the months of June and July, such things suffer seriously from drought when grown in heath-soil. For this reason, as well as to augment their vigour, some culturists use a compost of loam and heath-mould, instead of the latter in its pure state, and the double object is in that way gained. It would, nevertheless, be more perfectly answered by leaf-soil, which would combine the good properties of both. A *Rhododendron* or an *Azalea*, in leaf-mould, would grow and bloom like a plant which was placed in the very best of heath-soil, where it could not be subjected to drought, and was supplied with just that quantity of manure which would strengthen its growth, without diminishing, but rather adding to, its fertility.

All the hardy Heaths, Kalmias, and the like, will conform to the same rule. A heath, planted in moor-soil, is seldom uninjured by the hot dry weather of summer, unless it is in a shady situation. By putting it in leaf-mould, it would be comparatively safe from any such source of harm.

There is, besides, scarcely a shrub or an herbaceous plant from the woody districts of North America, that would not derive benefit from having a border of leaf-mould to grow in. This is markedly the case with *Asclepias tuberosa* and *decumbens*, various species of Lily, the pretty *Epigœa repens*, all the Trilliums, and a large proportion of the annuals. *Nemophila insignis* blossoms splendidly in a bed of leaf-mould, and all the dwarfer annuals will do the same.

Those who grow the Japan Lilies to the greatest beauty, notoriously cultivate them in leaf-soil. The lovely little Epimediums from Japan will also succeed best in this earth. *Gentiana acaulis*, which hardly any one cultivates well, may be easily reared in leaf-mould. And, in short, there are but few of the more delicate and low-growing hardy plants, of which *Daphne cneorum* may be further mentioned, that will not flourish in unwonted richness if the border in which they are situated be one of leaf-soil, or if this be the earth of the precise spot in which they stand.

Although, however, the species of plants for which leaf-mould is thoroughly adapted—and we have merely named a selection of them—be thus numerous, there is a far larger number to which a portion of leaf-mould in their compost would be advantageous. It may be substituted for decayed manure in most instances where that is generally used; and for heath-soil, in varying proportions, where that is wholly or partially employed. For Gesneras, Gloxinias, and all the rapid-growing plants that have their soil manured, leaf-mould will be more suitable than manure, as it will give the desired richness without producing undue leafiness.

For that immense group of plants, moreover, which is grown in a compost of loam and heath-soil, and which comprehends almost all the dwarfer kinds that are kept in pots, a rejection of the heath-soil and a substitution of leaf-mould would be of great service. It would make the compost decidedly more open, and it would improve the appearance of the plants without decreasing their flowering tendencies. It should form a special constituent of all composts for dwarf New Holland shrubs, for Pelargoniums, for Camellias, for low stove shrubs, and for Calceolarias.

As to greenhouse Heaths, the sudden loss of specimens, and the common damage done to them by the summer heat, is in great part attributable to the obstinate adherence to moor-soil among cultivators. Many of them, we are sure, would be renovated by loam, and all would be aided by leaf-mould. To some, leaf-mould, by itself, would be most applicable. But, as a remedy against extreme saturation, or the close binding up of the soil, and as a means of creating additional healthiness, we would certainly blend it with the heath-soil in every case where it was not considered proper to use it alone.

Having now briefly glanced at the uses of leaf-mould, we shall suggest, as a conclusion, the mode of preparing it. As all who have gardens possess plantations or trees, they can easily make it for themselves, and the expense of purchasing and fetching heath-mould will thus, to a great extent, be done away with. The leaves of the oak and the beech are the best for the purpose, though they will not decay so soon as others. When collected, they may be used, first, to form a hotbed for rearing early potatoes, radishes, rhubarb, tender annuals, &c. This will facilitate their decomposition, and when the heat of the heap is exhausted, it may be removed to a spare corner and left to itself for a while. By turning it over occasionally afterwards, and drenching it with water when it gets too dry, the leaves will decay more rapidly than if they were left untouched. When they are in a pulverized state, the soil is fit for use.

Perhaps it may be worth while to remark to those who adopt the new method of potting lately described in our pages, that leaf-mould is almost a necessary constituent of every compost that is made use of according to that system; since, from its porosity and its nutritiveness, it will at once enrich and help to drain any soil of which it is a part.

HARDY DOUBLE FLOWERS.

DOUBLE flowers are necessarily favourites with almost every one, being, with few and rare exceptions, much more beautiful than the single forms of the genus, and also, in the majority of cases, evincing the exercise of that skill, which, when attended with favourable results, is always so pleasing.

As exhibiting a curious fact in structural transformation, they are likewise very interesting; for it is now pretty well known that all the double flowers produced by art (and probably those found so in a state of nature have the same origin) have undergone this singular change, whether by high culture or otherwise, through the conversion of the stamens of the flower into petals. This is clearly proved by the absence of stamens in double blossoms, and by the frequent existence in them of petals in only a hal-ftransformed condition, having the half-stamen on one side, and the half-petal on the other.

That the occurrence of such a phenomenon at all favours the botanical theory which reduces all the floral parts of plants to leaves in a metamorphosed state, is exceedingly questionable; since, to confirm a belief of that character, the circumstance should be so common, where the conditions of growth are merely natural, as to render departure from it the extraordinary thing: whereas it need not be asserted that the direct opposite of this is the case.

Regarding the cause of double flowers, and the means of obtaining them, no certain knowledge is current. The general opinion, founded, most certainly, on very rational premises, is that propitious culture in a rich and highly congenial soil, is the instrument in effecting the change. This hypothesis is based on the fact, that many of the plants, which, with Nature's assistance alone, have never borne other than single flowers, have, when subjected to the more refined processes of cultivation, been made to produce those of a double kind. Another piece of presumptive evidence on the same side, is, that some double-blossomed plants, if treated in the artificial manner which it is thought first altered their character, retain their double properties; but, when placed in other and less suitable circumstances, pass back again into the single state.

An instance, which appears to prove the direct reverse of all this, will probably be familiar to those who are accustomed to look on things with an observant and scrutinizing eye. It is that of the common meadow Crowfoot or Buttercup, (*Ranunculus bulbosus*,) which, when growing by road-sides or in other similar places, where it can be supplied with little nourishment, often becomes, during the summer, under the influence of partial drought and exhaustion, changed into a double or semi-double form. Possibly, other like cases, though not of such frequent occurrence, may be easily met with; showing that at least it is not superior culture of itself that effects this transformation of flowers in all plants that exhibit it.

The rule, then, as far as physiological data and ordinary experience can be made to educe one, seems to be that double flowers are an extra development of inferior organs, requiring an additional stimulus to occasion this unusual expansion. But, on the other hand, if that stimulus is carried too far, or rendered too powerful, its effect will be, not the changing of the floral stamens into petals, but the production of an undue quantity of leaves on the plant, actually impoverishing and deteriorating the ordinary blossoms. And, lest it should be assumed that the stimulus we speak of is to be solely one afforded by nutritive soil, we must add that this is merely a part of the process, the principal feature of which is the repeated and even annual removal of the plants to a new situation and soil.

We allude here, of course, to the method which should be adopted in attempts to render the single flowers of any plant double, and not to that which is necessary to be pursued with plants that have already been made to bear double flowers; although, with particular species, this routine is as requisite after as before the change, to prevent deterioration. So unacquainted are we with the laws which govern the matter, that we are presented with instances in which the flowers of a plant become accidentally double, and only on part of the specimen: thus giving the means of perpetuating the variation, without furnishing any clue to its cause.

Thus much premised, we shall turn our attention more especially to those double-flowering plants which are of a hardy character, and which, therefore, every person possessing a garden may easily cultivate. For this last reason, and because the class contains many species, the beauty of which is but very imperfectly known to a large proportion of growers, we will give a list of the best sorts which are known to us, and which we can decidedly recommend as ornamental.

The double-flowered Lyng (*Calluna vulgaris, flore pleno*). A low shrub, with deep pink blossoms, and flowering through the whole of the spring, far into the summer.

The double-blossomed Furze (*Ulex europæa, flore pleno*). A tree-like shrub, attaining the height of six or eight feet, with rich orange-coloured flowers, borne almost all the year, but especially from April to July.

The double-flowered common Sun-Rose (*Helianthemum vulgare, flore pleno*). A dwarf trailing shrub, with yellow blossoms, opening in May, and continuing till late in the autumn. (Several other varieties of the same genus have double flowers, and are very showy.)

The double-flowered Snapdragon (*Antirrhinum majus, flore pleno*). A half-shrubby plant, rather more than a foot high, of which there are varieties with flesh-coloured flowers, and with those of a deep blood-colour, blooming from June to September.

The double red officinal Pæony (*Pæonia officinalis rubra*). A fine herbaceous plant, about eighteen inches in height, with splendid red flowers, expanded in May and June.

The double-flowered narrow-leaved Pæony (*Pæonia tenuifolia plena*). A dwarfer plant than the last, with rich red flowers, from May to June.

The double-flowered Rocket (*Hesperis matronalis, flore pleno*). A fine herbaceous plant, of which there are two or three varieties with lilac and white-coloured flowers, produced from May to August, and very fragrant.

The double large-flowered Larkspur (*Delphinium grandiflorum, flore pleno*). A very handsome herbaceous plant, bearing the most brilliant blue flowers from May to September.

Mr. Barlow's Larkspur (*Delphinium Barlowei*). A hybrid herbaceous plant, three feet high, of a noble habit, and having large dazzling blue blossoms from June to September.

The double-flowered Chinese Larkspur (*Delphinium chinense, flore pleno*). A splendid dwarf perennial, producing many large blue flowers from June to September. (There are other double varieties of Larkspur almost equally good, among which the German annual ones are conspicuous.)

The double Wallflower (*Cheiranthus cheiri, flore pleno*). A beautiful sub-shrubby plant, with yellow flowers, borne from April to July. (Another variety, with dark brownish blossoms, is alike handsome.)

The double-flowered Gillyflower (*Mathiola incana multiplex*). A pretty little shrub, with various-coloured flowers, appearing from May to November. (The other stocks, which are varieties of this genus, are well known, such as the Brompton and annual kinds.)

The double meadow Cuckoo-flower (*Cardamine pratensis plena*). A showy herbaceous plant, a variety of a weed common in low pastures, and producing its lilac blooms in April and May.

The double-flowered Dropwort (*Spiræa filipendula plena*). A beautiful dwarf herbaceous plant, the single form of which is abundant on English commons. The double one has white flowers, which appear from June to October.

The double-flowered Meadow-Sweet (*Spiræa Ulmaria multiplex*). A handsome herbaceous plant, taller than the last, fit for any moist situation, and bearing white blossoms from June to October.

The double-flowered Marsh Marigold (*Caltha palustris, flore pleno*). A very specious herbaceous plant, fit for the margins of ponds, or swampy situations, and having rich yellow flowers in April and May.

The double-flowered acrid Crowfoot (*Ranunculus acris, flore pleno*). A fine herbaceous plant, producing yellow flowers in June and July.

The double-flowered bulbous Crowfoot (*Ranunculus bulbosus, flore pleno*). Likewise a showy plant, with similar flowers to the last, and blooming at the same time.

The double plane-tree-leaved Crowfoot (*Ranunculus platanifolius, flore pleno*). A fine herbaceous plant, bearing white blossoms in May and June. (There are several similar varieties of Ranunculus, with double flowers, and the numerous Asiatic kinds so much multiplied by florists.)

The double Globe-flower (*Trollius europæus, flore pleno*). A good herbaceous plant, with yellow flowers in May and June.

The double-flowered granulated Saxifrage (*Saxifraga granulata plena*). A pretty herbaceous plant, gay with a profusion of white flowers in May and June.

The double corniculated Lotus (*Lotus corniculatus, flore pleno*). A neat, trailing, herbaceous plant, covered with yellow flowers in June and July.

The double-flowered Ragged Robin (*Lychnis flos-cuculi plena*). A showy herbaceous plant, about a foot high, with large pink flowers, and blooming from May to August.

The double-flower Feverfew (*Pyrethrum Parthenium, flore pleno*). A pleasing plant, herbaceous, and with white flowers in June and July.

The double wood Wind-flower (*Anemone nemorosa, flore pleno*). A beautiful little plant, producing its pinkish white blossoms in April and May. (The varieties of *A. pavonina*, *A. coronaria*, and *A. palmata*, are all very varied and handsome.)

The double-flowered Meadow Rue (*Thalictrum anemonoides, flore pleno*). A good herbaceous perennial, about a foot in height, producing whitish yellow flowers in April and May.

To this list may be appended double-flowered Daisies, Primroses, Violets, Polyanthuses, Chrysanthemums, Roses, Cherries, and Peaches, all of which are superior to the single-flowered forms of the same species, and possess an interest which greatly commends them to the attention of the cultivator.

In regard to the cultivation of this diversified group of plants, a very few observations will suffice, as their treatment is of the most common description. All the herbaceous kinds (and these constitute the great majority) are propagated either by division or cuttings, the latter method being adopted with such as partake likewise of a shrubby nature, or are what is usually termed suffruticose. Of this last class, the Wallflower is an example. These should have the cuttings taken off about the month of May, and placed beneath a hand-glass at the foot of a south wall, where, with a slight shading, and only a moderate quantity of water, carefully supplied, they will readily strike root. Those which are increased by division, such as the Delphiniums, Spiræa filipendula, &c., should be separated as early as possible in spring after the severe frosts have ceased, and the exterior portions of the plants should invariably be chosen for forming new ones, as these are always the most healthy and vigorous.

Such plants as Daisies, Primroses, Polyanthuses, &c., which easily degenerate, ought to be divided every season, or at least every other year, and shifted to a fresh spot; for there is nothing so beneficial to them, or that preserves them so well against deterioration, as this frequent removal.

Wallflowers, Snapdragons, and many others which flower twice in the season, should have their old blossoms picked off as soon as they begin to decay; as, besides promoting their future productiveness, this tends much to invigorate the plant and recruit all its energies.

The Helianthemums and *Lotus corniculatus* are beautifully adapted for growing on rock-work, or on narrow borders on which a few pieces of ornamental rock are scattered. To increase the double Stocks, it is a common practice to save seed from those rich and true-coloured single ones that happen to be growing near the best allied double ones, and when the seedlings make their apppearance, to discard all the strongest and tallest of those which first present themselves, as these are generally single.

We have thus hurriedly gone over the principal plants in our list, and we have now only to suggest, that the remainder of them are all more or less allied to some of those to which we have specifically alluded, and, by this palpable resemblance, it will be easy to ascertain to which of those their treatment should be assimilated. We have not entered largely into the question of their culture, because it is mostly of such a simple kind that no farther directions are needed.

FLORICULTURAL NOTICES.

NEW OR BEAUTIFUL PLANTS FIGURED IN THE LEADING BOTANICAL PERIODICALS FOR JUNE.

Barnade'sia ro'sea. "The singular genus *Barnadesia* consists of South American spiny bushes, with so very similar a foliage that they can hardly be distinguished; but differing in the size and form and number of their flower-heads." The present one, obtained through "the kindness of his Grace the Duke of Northumberland, is of the greatest rarity." It differs from the other species in not having monadelphous stamens, nor "a solitary tubular flower in the disk; in the place of the latter there is a space which pours forth honey in abundance. It also appears that the hairs of the receptacle are not twisted spirally as in other Barnadesias, but are soft and straight. It is a warm greenhouse plant, and should be kept during winter in an intermediate house, between a stove and greenhouse, where the temperature averages 74°, or as near as possible. It may be grown in a compost consisting of loam, peat, and sand, in equal proportions," watered sparingly in winter, and propagated by cuttings or seeds. The curious red flowers are borne in a sort of coronet at the top of the stem. *Bot. Reg.*, 29.

CE'STRUM VIRIDIFLO'RUM. Specimens of this highly fragrant plant were sent from Mr. Tweedie from "Port Alegre in South Brazil, where it is seen in woods; and it was remarked that it diffused a sweet scent at night, as is frequently the case with flowers of this peculiar colour. It was afterwards, in 1836, transmitted by the same indefatigable collector from woods of St. Janvier, and on the eastern side of the Cordillera, in Tucuman. At the same time seeds of it were sent by Mr. Tweedie to Mr. D. Moore, of the Glasgow Botanic Garden, where flowering plants were produced last year. This able cultivator observes that, though the flowers are not very showy, they are produced very abundantly, and the plant appears to be of easy culture in a cool stove, flowering when eighteen inches or two feet high. It flowered in the autumn and early winter, and, probably, will do so for many months in the year." It is nearly allied to C. strigillatum of Peru, and that has cordate leaves. *Bot. Mag.*, 4022.

COMAROSTA'PHYLIS ARBUTOI'DES. "A native of Quezaltenango, in Guatemala, this plant has been raised in the Garden of the Horticultural Society, from seeds received from Mr. Hartweg. It produced its flowers for the first time in October, 1842;" and began to blossom again this May. "In some respects it is rather like C. polifolia, but its leaves are much broader and larger and thinner, and they are covered beneath with ferruginous down; the flowers are in panicles, standing high above the leaves, are four times as large, and are white, not crimson. It is a pretty shrub, which proves rather tender for the climate of London. It grows five or six feet high, and like the common kinds of *Arbutus*, thrives well in a light sandy loam, mixed with a small portion of leaf-mould. It is increased either by seeds or by budding;" and flowers freely from October to May. *Bot. Reg.*, 30.

DENDRO'BIUM TAURI'NUM. The present interesting new species belongs to what is called the spatulate section of the genus, which is exceedingly well marked, and "consists of species with a stiff erect habit, racemes of flowers placed on a long peduncle opposite the leaves, large showy flowers, and the petals remarkably longer than the sepals. But beyond this, there is nothing that differs from *Dendrobium*; and as the three first characters are merely of habit, the last can hardly be regarded as of enough importance to authorize the establishment of a genus. *D. taurinum* is a native of Manilla, whence Mr. Cuming sent it to Messrs. Loddiges. It has large flowers, with yellowish green sepals, rolled back at the points, very long deep purple twisted petals, and a paler purple lip, with three elevated lines along the middle, and a few small tubercles near the apex. The column is short, and somewhat pouched at the base, in consequence of the lip being adherent to it at that place. The plant is five feet high. It flowered at Hackney in October last;" and has been in blossom all this spring. Dr. Lindley has wild specimens from Mr. Cuming, which are not nearly so handsome as those flowered with Messrs. Loddiges. *Bot. Reg.*, 28.

LOMA'TIA ILICIFO'LIA; *var.* PINNATI'FIDA. "Apparently a very variable species, and of extensive locality in Australia; Mr. Brown mentioning his first variety as an inhabitant of the southern and eastern coasts, the second as a native of Port Jackson, and the third of Wilson's Promontory, also on the south coast. The cultivated plant in the Royal Botanic Gardens of Kew has the leaves extremely variable on different parts of the same specimen, whence a fourth variety has been constituted. It is an ornamental plant, both in its copious evergreen foliage, and in its long compound spikes of white flowers, which are plentifully produced in August. It thrives well at Kew in a peaty or heath soil, simply protected by a frame." The plant is a low shrub. *Bot. Mag.*, 4023.

OPERATIONS FOR JULY.

As it is extremely probable that the great wetness of the past two or three weeks will be succeeded by a period of unusual drought, it must not be supposed that, because the beds of the flower-garden have been saturated with water, they may not yet need to be attended to in this particular; for where the soil is at all light and open, a very short period of dry weather will suffice to abstract all the moisture from the surface portion, and will thus render artificial watering indispensable.

On account of the coldness of the weather during the late spring, a number of the half-hardy plants that have been placed out in the flower-beds and borders have had part of their foliage turn yellow, or even fall off; and some of them have even become so generally unhealthy that it will be desirable to take them away entirely, pot them, and place them in frames for furnishing cuttings wherewith to propagate the sort, and supply their places with better plants from the greenhouse or frames, where they happen to be possessed. It is much better thus to sacrifice a few inferior specimens than to have a bad season's bloom, or to have it come very late, which would inevitably be the case were the sickly and feeble plants left in their present state.

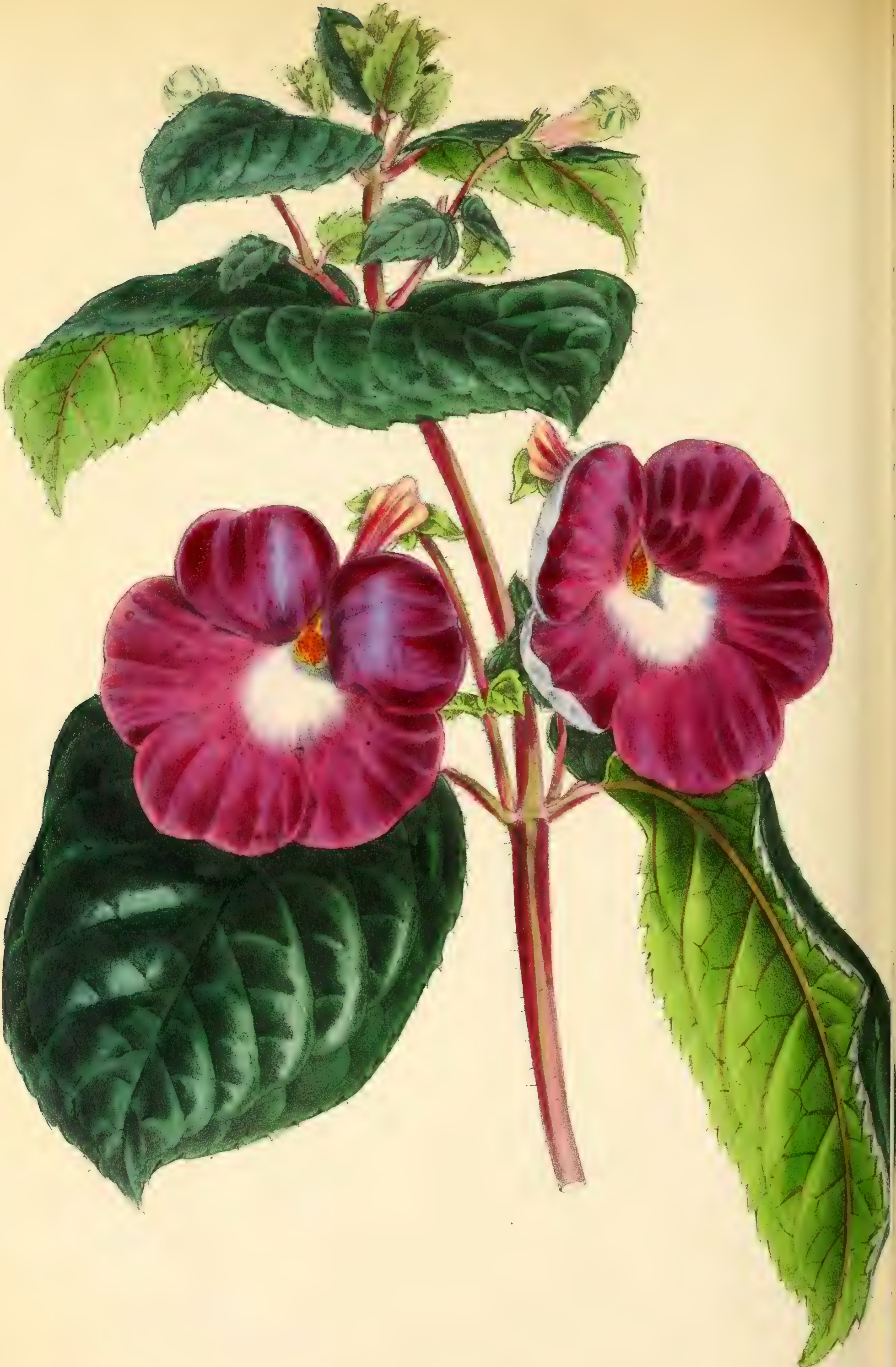
It will also be observed that, from the same cause, where the plants are really unhealthy, they will evince a disposition to flower prematurely, or with a degree of imperfection which is by no means equal to what they are desired to display. In these instances it will be advisable at once to cut off the blossoms, in order to throw the whole energies of the plant into activity on the work of producing young lateral shoots, which are now chiefly to be wished for, and must always exist ere any proper production of flowers can take place. As a rule for this and all similar circumstances, it may be affirmed that no plant should be suffered to flower till it has developed a sufficiency of lateral shoots to make the expansion of blossoms both safe to the specimen and likely to be generally profuse and brilliant.

The effect of the late rains, in beating down all out-door specimens (even those of a comparatively strong nature) that have not been adequately supported, will show, in a very conspicuous manner, the necessity for staking every plant that is the least inclined to be weak. The great point to be observed is, as we have often before said, to apply whatever kind of stake is needed, or to attend to any requisite training, in quite an early stage of the plant's advancement. Another most important particular, however, is to continue such attentions with the greatest assiduity throughout the whole of that part of the season when measures of this order are required. It is as prejudicial to a plant to permit it to straggle away from the stake after it has once been fixed to it at the base, as it is to let it fall down in the first instance for want of a stake. Every shoot, therefore, that has to be trained or supported, must be attended to when it has grown three or four inches beyond the point where it was last fastened, and never left to grow out of its right position. This remark applies especially to upright-growing species, and it will also include all classes of climbers. Where a climbing plant is desired to take a particular direction, particularly when this is not exactly the natural one, the neglect of a day or two in fastening the newly-formed shoot anew to its trellis will sometimes materially disfigure the specimen for a season, and the deformity it causes will ever be more or less perceptible for a longer or a shorter period, according to its nature. As this can so readily be avoided, it is very injudicious to risk it.

Annuals sown now, if their seeds be well steeped in lukewarm water before they are committed to the ground, will come into flower late in the autumn, should there be no early frosts; and a feature will thus be added to the flower-borders which is very rarely seen at that season. Seed should be saved from those whose inflorescence is now departing; though the better way is, in private places where cultivators prefer their own seeds, to keep a few plants in pots, or in a bed beneath a frame, for this purpose. The injury of the seed by wet, or its wasteful diffusion by the same agent, by wind or otherwise, may thus be better guarded against.

In the plant-houses, this month, it is of moment that a considerable amount of air should be supplied, particularly to green-house and hard-wooded stove species. This is just the period when air will be most beneficial to such objects, in order the more effectually to ripen their wood, and to bring them into a hardy condition. All kinds may now be propagated, if this has not already been done; and Heaths, with the more hardy of the green-house plants, may be readily struck in a cool shaded frame, without any artificial warmth. Pelargoniums must be cut down and re-potted as they pass out of bloom, taking care to trim off the roots in the same proportion as the branches are pruned. Cacti, which are also losing their flowers, may be transferred to a warm house, to perfect their growth.

This is the time for commencing the operation of budding. Damp or dull weather is the best for the process, and should be chosen when it can be had. The practice can be much more extensively employed than is commonly thought, and is of great value in giving variety to a pleasure-ground, by the insertion of several sorts of flowering trees or shrubs on one stock.



S. Holden del. & Lith

Achimenes grandiflora.

ACHIMÈNES GRANDIFLÒRA.

(Large-flowered Achimenes.)

Class.
DIDYNAMIA.

Order.
ANGIOSPERMIA.

Natural Order.
GESNERÀCEÆ.

Generic Character.—*Calyx* with its tube adnate to the ovary; limb five-parted; lobes lanceolate. *Corolla* tubularly funnel-shaped, often swollen at the base; limb five-cleft; lobes sub-equal, sub-rotund. *Stamens* four, didynamous; anthers not cohering. *Rudiment* of the fifth stamen situated below the base of the corolla. *Nectary* glandulose, in a small ring. *Style* slightly thickened towards the stigma, oblique, or with two separate lobes. *Capsule* nearly two-celled, two-valved; placentas parietal, sub-sessile.

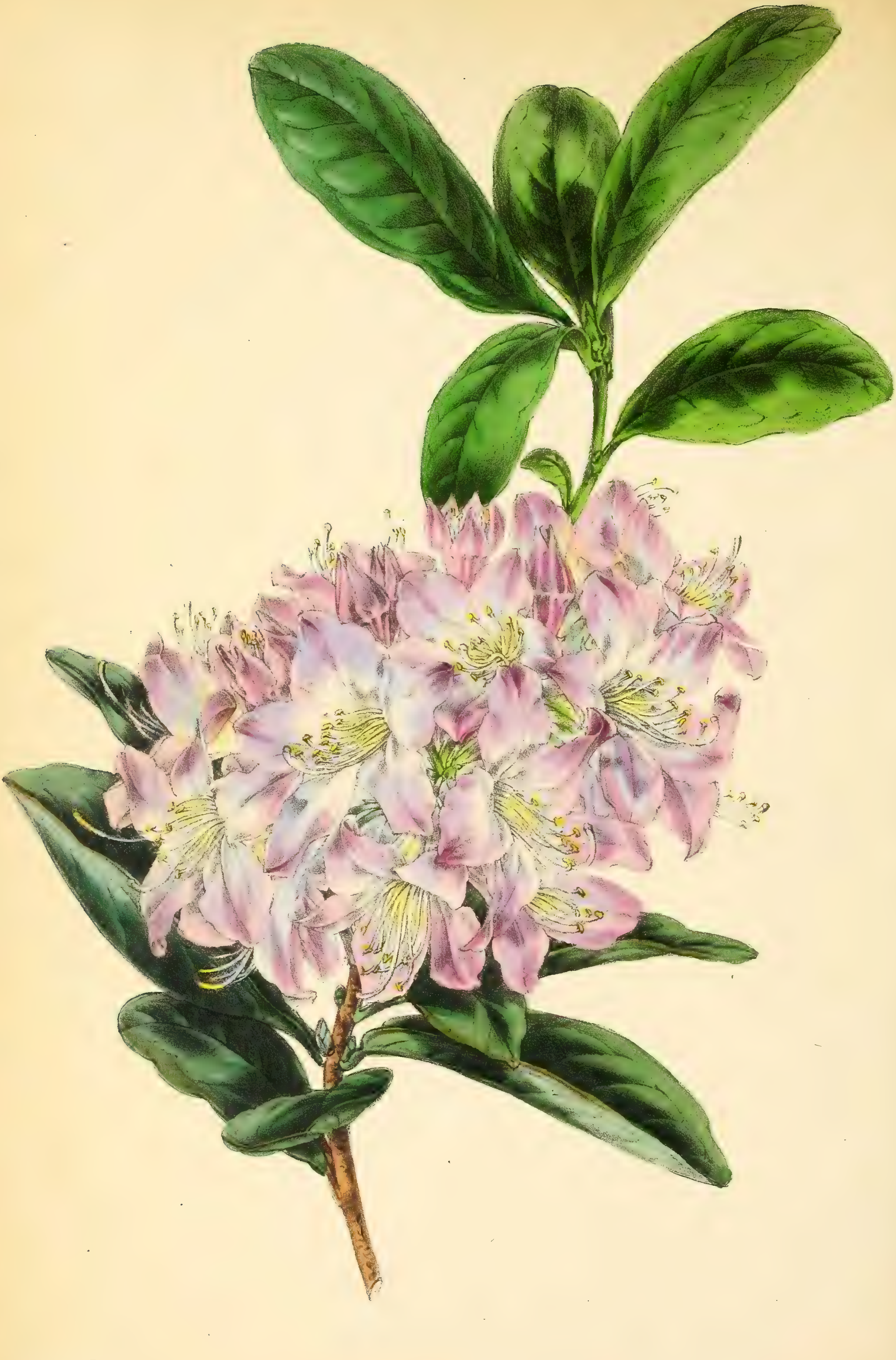
Specific Character.—*Plant* an herbaceous perennial. *Leaves* ovate-oblong, serrated, larger on one side than the other, deep-green above, stained with blood-red below, covered with coarse hairs. *Flowers* axillary, on peduncles as long as the petioles of the leaves, saccate at the base, large deep-purplish crimson, with a whitish eye.

Our first knowledge of this very handsome plant was obtained at Mr. Low's, Clapton, and Messrs. Rollisson's, Tooting, in the autumn of last year, when it flowered, somewhat imperfectly, at both their nurseries. In the present season it has bloomed more abundantly at many places; and our drawing was made, about two months back, from plants sent us by Messrs. Lucombe, Pince, and Co., of Exeter, with whom it had previously flowered for some time.

It appears to have been discovered in a district of Mexico, by Messrs. Schiede and Deppe; though we find that the first plants received in this country came through a continental nurseryman, M. Van Houtte, of Ghent. It has now been diffused through most of the English nurseries, and will probably soon be as common as *A. longiflora;* to which it promises to be a rival. The flowers, apparently, are not quite so large as those of *A. longiflora;* but they are of a very rich and brilliant colour, essentially distinct from anything else of the kind we yet possess, and, probably from the shortness of the upper joints on the shoots, evince a disposition to come in something like large terminal clusters. As an associate with *A. longiflora*, too, and *A. rosea* and *coccinea*, the species will be a valuable addition to the present race of stove or warm greenhouse ornaments.

It should be cultivated like *A. coccinea;* and requires a light nutritive soil, composed of fresh loam, and a large proportion of leaf-mould, or a somewhat less amount of decayed manure. It must not be stinted for pot-room, and should be started into growth in a stove or pit supplied with bottom-heat, where it may be kept till it is about to flower. When in a flowering state, it may gradually be removed to a warm greenhouse or cool stove, where it will bloom profusely.

Having been named, on the Continent, *A. Ghiesbrechtianum*, it is sometimes met with under that title, or a corruption of it. The hybridist will most likely find it of great value in obtaining a new race, when allied with *A. longiflora* or *A. coccinea;* as we are happy to see that the tribe seems likely to hybridize freely.



S. Holden del. & Lith.

Rhododendron fragrans.

RHODODÉNDRON FRÀGRANS.

(Fragrant-flowered Rose-bay.)

Class.
DECANDRIA.

Order.
MONOGYNIA.

Natural Order.
ERICÀCEÆ.

Generic Character.—*Calyx* five-parted. *Corolla* somewhat funnel-shaped, or campanulate; rarely rotate or five-parted; limb five-cleft, somewhat bilabiate; upper lip the broadest, and usually spotted. *Stamens* five to ten, usually exserted, declinate; anthers opening by two terminal pores. *Capsule* five-celled, five-valved, rarely ten-celled and ten-valved, with a septicidal dehiscence at the apex. *Placentas* simple, angular. *Seeds* compressed, scrobiform, winged. *Don's Gard. and Botany.*

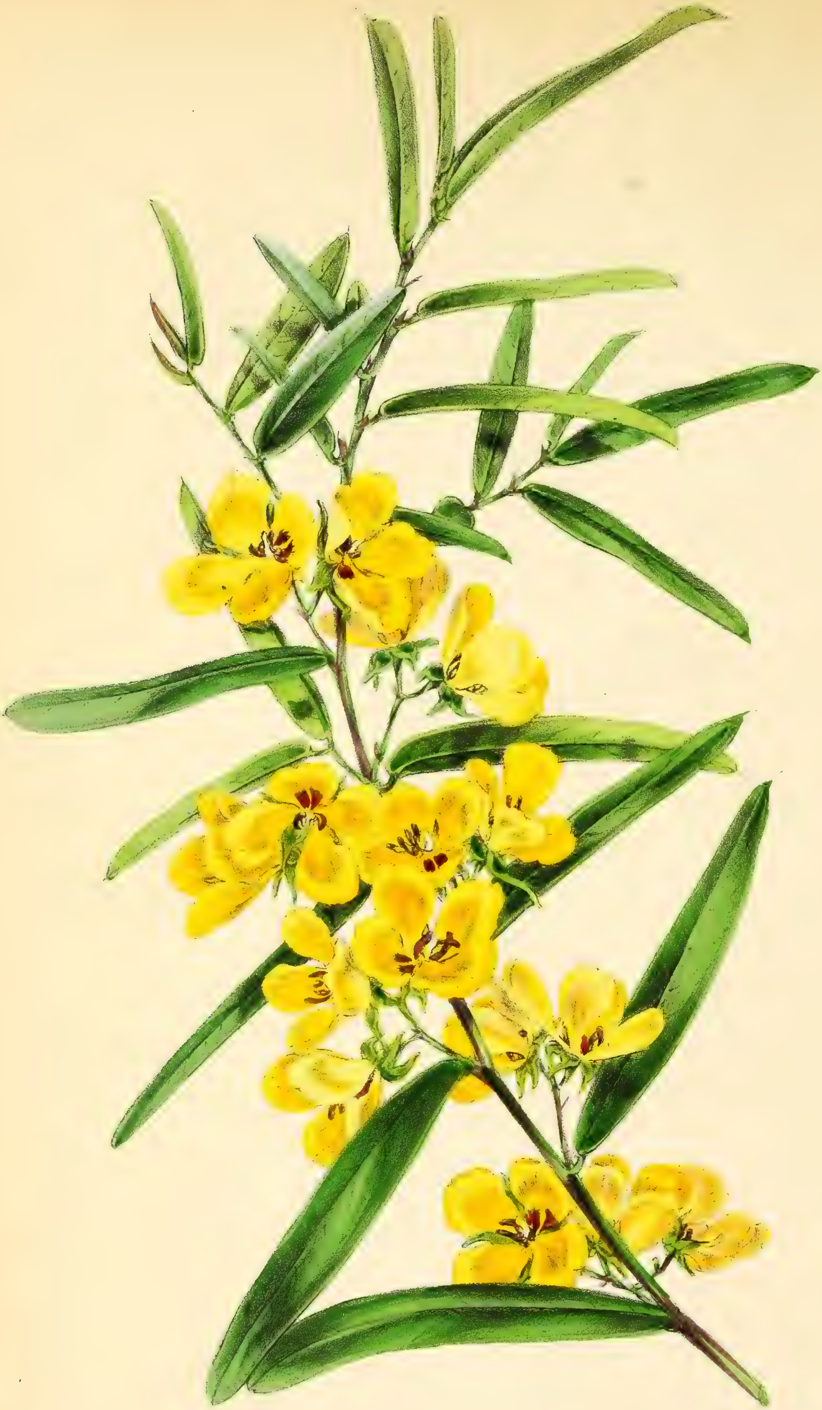
Specific Character.—*Plant* a very dwarf compact evergreen shrub. Leaves dense, small, oblong, slightly wrinkled. *Flowers* pale pinkish lilac, of various shades.

In calling at the nursery of Messrs. Chandler and Sons, Vauxhall, at the time their splendid Camellias were in bloom, this spring, we were much pleased to notice some slightly forced specimens of the beautiful *Rhododendron* now figured, then flowering most liberally in a greenhouse, and remarkable for its delicate and agreeable odour. As this characteristic is an unusual one in the genus, though here very distinctly perceptible, and as the *R. fragrans* is, likewise, in all respects an interesting and ornamental object, we now supply a drawing, which was made at Messrs. Chandler's in the month of May.

The plant is probably a hybrid between *R. catawbiense* and some of the hardy fragrant-flowered Azaleas; though it was raised accidentally, from seed of a variety of *R. catawbiense*, twenty-five or thirty yeas ago. It forms a very compact dwarf shrub, decidedly evergreen, with small and dense foliage, and numerous clusters of pretty pale pinkish lilac blossoms, in which there is a variety of delicate tints, approaching to white in the centre. It has quite the habit of a *Rhododendron*, and looks like a small, close-growing, pale-flowered variety of *R. ponticum*, with the leaves a little wrinkled, and destitute of much glossiness. Its natural flowering season is early in May, when the other Rhododendrons bloom.

On account of the difference in its aspect from the common varieties of *R. ponticum*, and the delicate fragrance of its blossoms, it is well suited for the front of shrubbery borders, or for giving variety to beds of *R. ponticum*, by being placed at intervals round their margin. It is also an excellent plant for growing in tubs or large pots, to place about the flower-garden or pleasure-grounds in conspicuous positions, or to stand in the conservatory, or portico or hall of a mansion, for purposes of occasional decoration. But, as its pleasing scent can hardly be appreciated out of doors, it is perhaps best adapted for keeping in a warm greenhouse or conservatory, in pots or tubs, where, without any forcing, it will come into bloom sufficiently early to prevent its appearing too common, while its fragrance will be brought readily within reach. Treated in this manner, it constitutes a really attractive plant.

It is multiplied by layers or by grafting on stocks of *R. ponticum.* The latter is the most economical plan, as it only requires a small portion of a shoot; but it is probable that the layering method will best retain the habits of the plant.



S. Holden, del & Lith

Labichea punctata.

LABÍCHEA BÌPUNCTÀTA.

(Two-pointed-leaved Labichea.)

Class.
DIANDRIA.

Order.
MONOGYNIA.

Natural Order.
LEGUMINÒSÆ.

Generic Character.—*Calyx* of five sepals, nearly regular, deciduous. *Petals* five, roundish-obovate, rather orbicular, nearly equal, spreading, exceeding the calyx. *Stamens* two, hypogynous; filaments very short; anthers two-celled, thick, arched, unequal, opening by a suboperculate pore. *Ovary* on a short stipe, obliquely ovate, oblong, compressed, ending in a subulate style, containing two ovula. *Stigma* simple.—*Don's Gard. and Botany.*

Specific Character.—*Plant* an evergreen shrub. *Leaves* simple, alternate, narrowly oblong, some of them having two stiff sharp points, others only one. *Flowers* in short racemes, axillary, yellow, with a brown blotch at the base of the petals.

A neat and rather showy greenhouse shrub, the flowers of which remind us, in their size, form, and colour, of *Euthales macrophylla*, a handsome Swan River herbaceous plant, of recent introduction; but, being a shrub, and less straggling in its character, the present object is of more value, while, when grown favourably, it will possibly be quite as profuse as the *Euthales* in its production of bloom.

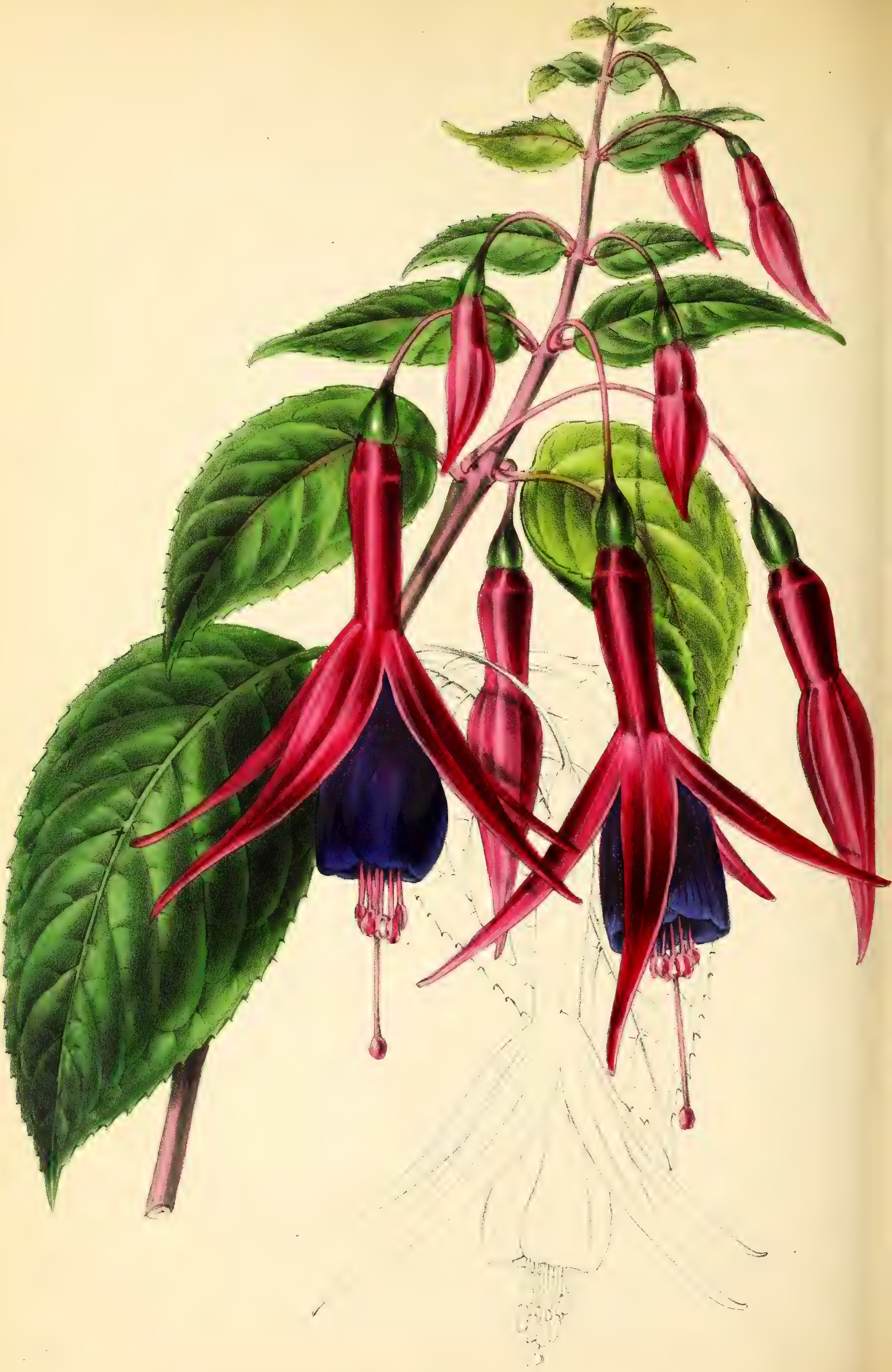
Seeds of it were imported by Mr. Low, of Clapton, from the Swan River Colony, two or three years ago, and the plants have flowered repeatedly in the Clapton nursery. From a specimen which was blooming there in the month of April last, we had the accompanying figure taken. Judging by the specimen in question, we should describe it as a plant disposed to grow erectly, and not to ramble, but to attain the height of three or four feet when left unchecked. Indeed, it has much of the upright tall habit of *Hovea Celsii*, when that species is unpruned, and subjected to no peculiar treatment; though *L. bipunctata* has a freer development of branches.

The flowers are borne in a kind of short raceme from the axils of the leaves, and are not at all inclined to be terminal. They abound most, however, towards the top of the plant; which is perhaps a necessary circumstance in all tall specimens.

We have little doubt that, when differently managed, this plant would as readily yield to culture as many other well-known greenhouse shrubs, and become as dwarf, bushy, and free-flowering. To bring about these conditions, it should be treated pretty liberally in regard to soil and pot-room ; mixing a quantity of leaf-mould with the loam used for potting it in, and giving it a larger shift than is allowed to common greenhouse plants generally. It ought, at the same time, to have its shoots kept stopped while they are growing, so as to induce it to remain low, and to throw out a number of laterals. Such treatment answers admirably with *Lalage ornata*, and this is a species of a very similar nature.

It blooms in the months of March, April, and May ; demanding only a light and airy place in any greenhouse. Cuttings, taken off in early spring or summer, root with freedom.

The genus is named after M. Labiche, an officer of the French ship *Uranie.* He accompanied Freycinet in his voyage round the world, and died on his passage to the Moluccas. The species is named *bipunctata* on account of some of the leaves having their point split into two. This characteristic is, however, by no means general ; and looks almost as if the point had been split artificially.



Fuchsia Exoniensis.

FÙCHSIA EXONIÉNSIS.

(The Exeter Fuchsia.)

Class.
OCTANDRIA.

Order.
MONOGYNIA.

Natural Order.
ONAGRÀCEÆ.

Generic Character.—*Tube of calyx* adhering to the ovarium at the base, and drawn out at the apex into a cylindrical four-cleft tube, whose lobes soon fall off. *Petals* four, alternating with the lobes of the calyx, and inserted in the upper part of the tube; very rarely wanting. *Stamens* eight. *Ovary* crowned by an urceolate gland. *Style* filiform, crowned by a capitate stigma. Berry oblong, or ovate-globose, four-valved, four-celled, many-seeded.—*Don's Gard. and Botany.*

Specific Character.—A hybrid between F. cordifolia and globosa, sharing the habit of both, and having long spreading flowers, the calyx of which is rich crimson, and the corolla deep violet purple.

The floricultural markets are now rapidly becoming filled with all kinds of hybrid Fuchsias, between some of which the most discriminating judge would scarcely be able to perceive any tangible distinction, or one which could be expressed in words. And this is in great part due to the hybridist taking hybrids which are not themselves sufficiently distinct in habit, or in the form and colour of their flowers, to breed from; the result of which practice must always be an increased confusion among the sorts, without obtaining anything novel enough to deserve special notice or culture. It cannot be too much urged on the attention of those who seek to obtain good seedling hybrids, that the parents must, in all cases, be very distinct species; or, if themselves seedlings, they should be equally different.

By following out this principle, the beautiful *Fuchsia* now figured has been raised by Mr. Pince, of the firm of Lucombe, Pince, & Co., of Exeter, between *F. cordifolia* and *F. globosa*, the former being the female, the latter the male parent. It was thought, in the experiment, likely that the fine long flowers of *F. cordifolia* might be united with the superb colours of *F. globosa;* and this object seems to have been very well accomplished; for *F. Exoniensis*, besides a kind of intermediate habit and foliage, has large flowers, which have a long tube, expanded deep crimsony scarlet sepals, and a dark purple corolla.

It was raised during the spring of 1842, and planted out in the open border with many other seedlings. It first flowered there, and has proved to be quite hardy at Exeter.

We cannot say much concerning it from personal observation; but we are informed that it blooms freely, and is a very handsome plant. The flowers are certainly fine, and of the very best colours. It would appear to bloom best when suffered to produce its blossoms at the natural season, and not at all forced forward. A cool greenhouse or pit will therefore be most favourable.

Like all hybrids of this class, it should have a tolerably rich soil, and a rather large pot. Either leaf-mould or rotten manure should be freely mixed with loam to form a compost for it; and it will require to be carefully watered in the summer, because Fuchsias are apt to be injured by drought at this season.

Its propagation is effected by cuttings; and we understand that Messrs. Lucombe, Pince, & Co., intend sending it out this month.

GARDENING AS A SCIENCE.

No. VII.

We have already dwelt at some length upon the appropriate excellence of decayed tree-leaves as a manure, and it is with pleasure we perceive that their value begins to be appreciated. The substance of leaves comprises all the chief constituents of trees, shrubs, and their organic products : hence it may be safely inferred that it is always bad policy to remove fallen leaves from the surface of shrubberies during winter, inasmuch as they tend not only to form a protective covering, but because, having undergone a partial decay upon the ground, they produce dress of the best quality when carefully forked, or digged into it, just before the return of spring.

As leaves are so important during their decay, we are naturally led to inquire into their agency while growing, and endowed with the principle of life; and here our attention is directed to the leading article of the *Gardeners' Chronicle* of July 1st, which comprises six propositions, all of great consequence, and worthy of profound investigation.

"1. If all leaves which a tree will naturally form are exposed to favourable influences, and receive the light of a brilliant sun, all the fruit which such a plant will produce will ripen perfectly in a summer that is long enough."

There is a bold assertion contained in this passage, which pointedly assails the entire practice of wall and espalier-training from beginning to end; for, to say nothing of the amputation of at least half the laterals during the winter regulation, the whole course of spring and summer management comprises an unintermitting displacement of buds, leaves, and young shoots; and yet we generally obtain an ample production of very superior fruit. Still, the theory is mainly supported by familiar facts: witness the utter degradation, in point of size, colour, and flavour, of *all the fruit* upon a currant and gooseberry-bush, the leaves of which have been devoured by the caterpillar (*larva* of *tenthredo*, or saw-fly). But, while we insist upon the indispensable necessity of healthy leaves—whether we regard them as active instruments of nutrition, or merely as organs of transpiration—it is wise not to attempt to prove too much. All the leaves attached to a fruit-bearing shoot are unquestionably vital, or, at least important to that individual member and its appendages; but we may be permitted to question whether the leaves upon a secondary, or lateral, perform any functions beyond those essential to the shoot to which they are attached, or that they contribute to the general sustenance of the tree.

"2. If all the leaves of a tree are exposed to such influences, all its fruit will advance as far towards ripeness as the length of the summer will admit of; it may be sour and colourless, but that condition will be perfect of its kind."

The above is little more than a repetition of No. 1—glancing, however, at the condition of winter pears, figs, &c., which remain unperfected by the sun's influence of one season. The proof or subversion of the theory might be obtained by cutting away every fruitless branch of a pear or other tree, reserving only those with fruit upon them. If, by comparison of two trees or bushes of the same species and variety, the fruit of the one which retains all its branches be found superior, it might be fairly inferred that leaves, however remote, exert some general influence upon the plant; and we know that Mr. Knight entertained that opinion with respect to the melon plant at least.

"3. But if all the fruit which a healthy tree will show is allowed to set, and a large part of its leaves is abstracted, such fruit, be the summer what it may, will never ripen."

The truth or fallacy of this generalization must be found in a mode of treatment which is never adopted by any one worthy of the name of gardener. Take away all the leaves, and you degrade all the fruit; divest a fruit-branch of *all* its foliage, and a local injury will follow; remove the leaves from unfruitful branches, and the buds upon them will be paralyzed: but we have no proof, founded in practice, that the fruitful shoots will suffer by careful pruning; at all events, hundreds of laterals and supernumeraries are cut away every year from peach and nectarine trees. The smaller shoots, or spurs, have a fruit at their base, are frequently shortened to within a bud or two above that fruit, and yet every sound fruit matures to luscious perfection. Would it do so were all the developments which proceed from eyes, retained at the spring dis-budding, permitted to remain without subsequent regulation?

"4. Therefore, if a necessity exists of taking off a part of the leaves of a tree, a part of its fruit should also be destroyed.

"5. But, although a tree may be able to ripen all the fruit which it shows, yet such fruit will neither be so large, nor so sweet, under such circumstances, as if a part of it is removed; because a tree only forms a certain amount of secretions, and if those secretions are divided among twenty fruits instead of ten, each fruit will, in the former case, have but half the amount of nutrition which it would have received in the latter case."

The conditions implied in Nos. 4 and 5 demonstrate that Nature does not provide the means to perfect her own productions; in other words, they show that art must be called in aid, otherwise its limited "secretions" are not sufficient to bring to excellence the fruit which a tree develops. If, therefore, it be admitted that the balance of nutritive and productive powers supplied by nature be imperfect, we must appeal to art; and, as it is seen that wall-fruit of transcending qualities is obtained upon trees from which the pruner rescinds three-fourths of the subsidiary branches, it becomes less than doubtful that severe pruning is beneficial when the *quality* of fruit is the grand desideratum.

The *object in view* should always be duly considered, otherwise we mistake principles. We have repeatedly contended against amputation and pruning of any kind, if vitality and perfect growth of timber (as in forest-trees) be contemplated, because the fibrous system of all the members appears to be closely connected; but the perfectibility of table fruits depends upon a mode of treatment which compromises the vital energy of the tree; and therefore the operations of the gardener ought to be guided by experience, under the tuition of a sound physiological theory.

"6. The period of ripening its fruit will be accelerated by an abundant foliage, and retarded by a scanty foliage."

Such are the propositions; and as the writer applies them "especially to the Vine," and protests against the "rigorous summer pruning" and "destruction of the laterals" so generally enforced, inferring that early maturity and excellence of out-of-door grapes is entirely owing to a large quantity of growing wood laid in during summer, we must appeal to facts, and endeavour to combine order and precision with the conditions required to perfect an ample crop of excellent fruit.

The general truth inculcated by the theory we deem to be undeniable; but experience, constant observation, and the actual manual operations of above twelve successive years upon Vines which cover a lofty and extensive space of walling, have proved to demonstration that unremitting attention is indispensable to obviate the "confusion worse confounded," which would inevitably result from leaving Nature to her own sportiveness. Nevertheless, most cordially do we go hand-in-hand with our theorist, in the following principles:—"It is a mistake to imagine that the sun must shine on the bunches of grapes to ripen them—Nature intended no such thing. On the contrary, it is evident that Vines naturally bear their fruit in such a way as to *screen it from the sun*, and man is most unwise when he rashly interferes with this intention. What is wanted is the full exposure of the *leaves* to the sun; they will prepare the nutriment of the Grape—they will feed it, and nurse it, and rear it up into succulence and lusciousness."

This is very good, and it accords sufficiently with the more general principles of the venerated master—T. A. Knight—whose own epistles we refer to from time to time with more than reverence. *He* it was who taught that in dwarf and open standards all the branches should be rendered so orderly and open as to admit the solar ray to and through the centres of each apple and pear tree; *he* directed the exposure of the foliage of his noble Persian melons to many square feet of glass for every single fruit; and he instructed, never wantonly to cut away one leaf that could be conveniently exposed on its upper surface to the full ray.

But we must not enlarge; and as this work is devoted chiefly to ornamental gardening, our remarks shall be general, after offering a few more practical observations to reconcile sound theory with fructiferous results; and, first, to conclude the subject of the Vine. We recommend Clement Hoare's work upon that tree, as it cannot fail to prove a guide to any one who intends to form a vine upon one of the best possible models which can comprise productiveness and facility in the management.

If a vine be trained according to his "long rod" system—the perpendicular shoots arising from one or two mother branches conducted horizontally almost close to the surface of the ground—all the rods ought to be trained a yard apart from each other at the final regulation of November, not one subsidiary shoot being suffered to remain, unless the annual renewal of all the bearing branches be contemplated in lieu of continuing the spurred rods.

These yard spaces will furnish scope to the fruit-bearing laterals, which ought to be secured and laid in at an angle of about forty-five degrees with the perpendicular rods. Herein it is that we agree with the writer of the propositions, and would abstain from removing a single leaf from the fruit branches till the crossing shoots advance nearly close to the uprights, when it will be needful to pinch or stop them at the top joint.

But as a crowded tree would utterly prevent the due exposure of all the leaves of the fertile shoots to the rays, it will be essential to break away every new or supernumerary development from the horizontal limbs—and such are apt to appear in rapid succession. While, then, we would nourish and tend with great caution every employed leaf, we must avoid intrusive new members. The tree so managed will cover an entire wall with verdure, though it be twenty feet high. As to the laterals, they should be stopped ere they intermingle and hide the light from more important leaves, or when they appear to check the swelling of the clusters; and here we would put the question to the real practical Vine-grower—whether he have not frequently observed a leading shoot, destined to lengthen a rod, to outrun a cluster which has been left upon it, so as to arrest its enlargement, if not altogether to deprive it of nourishment?

As to spur-bearing fruit-trees, no pruning is admissible till late in July, and then those subsidiary shoots which project from spurred branches must be cut back so as to cause the lowest buds to enlarge.

Flowering and *evergreen* shrubs are cultivated for ornament; therefore, as figure is a main object, the knife must be employed to confer it. We know that prunings are inimical to health and vigour, but these are sacrificed for effect; philosophy teaches facts, but fashion requires compliances, and therefore it is entirely futile to insist upon the rigid observance of natural laws.

THE PHILOSOPHY AND USES OF BOTTOM-HEAT.

Roots are to plants something like what the stomach is to all kinds of animals, for, where the functions of this are diseased, or fail to act efficiently, the whole system is speedily rendered unhealthy. And it may be laid down as an axiom of unvarying application in the culture of exotics, that where there is an abundance of healthy roots, any specimen that is otherwise properly treated will be in a flourishing state; while the converse of this will always lead to the opposite results.

A principle nearly akin to this was recognised in our last Number, where the effect of soils was in question. It is here more prominently stated, in order to consider the influence of another and very different agent; for whatever good may accrue from the judicious selection and mixture of soils, the advantage will be little better than nugatory, as regards stove-plants, if they are left to become cold, and therefore liable, even with the best mechanical appliances, to get sour or saturated.

In the earlier times of plant cultivation, scarcely any stove species was grown without being plunged in fermenting bark, or other source of bottom-heat; and though the appearance of such plants certainly will not endure comparison with modern specimens, that are reared without such a stimulus, the latter fall almost equally behind those which, besides every other known advantage, are yet subjected to a heating power from beneath. It is thus proved that it was not the use of bottom-heat, but the absence of various additional expedients now in vogue, which kept the plants of olden cultivators in an inferior condition; and hence, that it is not wise to discard a thing which the most trivial experiment will show to be of the utmost benefit.

As we have asserted the importance of having healthy roots to plants, we shall now endeavour to indicate how the application of bottom-heat is likely to bring about that desirable object. That plants cannot thrive much without good roots may be seen by cramping them in very small pots, when the stunted specimens, so common in China, will be obtained. But if those very specimens, even after they have been so treated, were to be planted in a free congenial soil, and have every other necessary assistance, they would soon develop themselves in a more natural and healthy manner, because the roots would then have proper play, and receive all due stimulus.

Now, it is well known that certain conditions of temperature, light, and moisture, are essential to the growth of all vegetables; but it is sometimes forgotten that a particular degree of these are quite as requisite to the roots as to the more exposed portions. To speak only of heat at present, a plant brought from the tropics may be excited by the application of atmospheric heat and moisture; but its developments will never be so fine and so luxuriant as they would be if it had, at the same time, the aid of a stimulus to its roots from below. Growing branches and foliage may serve, for a while, to impel the roots to push forth. They will not, however, long maintain their action, on account of themselves becoming weak and languid when unsupported by the roots; and unless the latter begin and remain to be the first in motion, or at least advance concurrently with the more exposed parts, true healthiness or productiveness (that is, the highest degree of both) can never be realized.

To attain the condition last mentioned, it is requisite that the heat (which is the principal stimulant) be as great, or nearly as great, in the pot as it is in the air. Where no artificial temperature is employed from below, it need not be said that the soil in pots, in ordinary cases, must be far colder than the atmosphere;

and when, as generally occurs, the rays of the sun cannot reach that soil, it will often become so cold as to render the water administered in some degree stagnant and putrid, in spite of the best drainage.

The philosophy of bottom-heat, then, is, by making the soil in which plants are growing nearly as warm as the atmosphere, and by thus exciting the roots and keeping them growing as fast as the branches, to give a constant and healthy supply of nutriment to the latter, and so to promote the entire well-being of the plant.

That such a practice is conformable with the procedure of nature in the countries from whence our stove plants are derived, is perfectly clear. Vegetation there grows mostly in the rainy season, which is immediately succeeding the dry season. During the dry period, the earth is almost baked with heat, and thus, on the fall of rain, it becomes a literal hot-bed, sending forth a nearly incessant volume of vapour. Here, consequently, is the natural method of furnishing bottom-heat.

But the uses of a direct supply of heat to the roots of plants do not end with the excitation of the roots simultaneously with that of the branches. They are of a much more general and varied character. The soil, besides being thus made warm and genial, is prevented from holding too much water, and the practice is therefore a great auxiliary to drainage, which is one of the most influential agents in the culture of plants. With this perfection of drainage, too, there is a constantly attendant augmentation of fertility; for a plant in soil through which fluids can circulate rapidly never loses its productiveness, when other circumstances are alike propitious.

Bottom-heat is further beneficial as affording the means of guarding the roots of plants from the casual fierceness of a summer sun, of keeping them more uniformly moist, and of diffusing a delightful moisture through the atmosphere. We assume here, however, that the pots are plunged in the heating material, a practice which we consider inseparable from the system. Too frequently, in hot summers, when the sun is shining in all his fervour, his rays, falling on the sides of pots containing tender plants, speedily dry up the soil and injure the roots. This is avoided by the plunging attendant on the use of bottom-heat. By watering, likewise, the material in which the pots are plunged, as well as the soil within them, the moisture can penetrate the pots from without, and keep up a more equable supply, without the trouble of such oft-repeated waterings as are necessary in common circumstances. The same moisture, also, existing in the bed employed for plunging in, will spread itself, by evaporation, through the air of the house, and so maintain it in a far purer, more favourable, and unfluctuating state, than watering the paths, flues, or hot-water pipes would do.

We shall notice but one more benefit arising from the employment of bottom-heat, which is, that it hastens the development of the branches of plants in the early part of the season, by this means giving them more time to mature their shoots, and even itself contributing to the accomplishment of that end. It is the most appropriate way of assisting their spring and summer growth; and, according to our long-since declared views, the spring and summer constitute the time at which alone plants require artificial stimulation.

Although so few cultivators evince a consciousness of the advantages of bottom-heat, on a large scale, it is easy to show that all acknowledge its value in some instances. In propagation, for example, cuttings or seeds of plants from warm climates are very rarely put in without being plunged in a bed that is heated from below. Gloxinias, Gesneras, Achimenes, and other fast-growing plants, are, moreover, seldom cultivated in a stove that is not furnished with bottom-heat. And if the principle that bottom-heat facilitates superior growth, or the formation of roots, be thus universally subscribed to in a practical way, there can surely be no reasonable objections to the general carrying out of that principle, so as to include every kind of stove-plant.

In respect to the fittest mode of creating bottom-heat, there will probably be a difference of opinion among practical men, some preferring that produced by bark, as the cheapest, and others deeming that caused by a hot-water apparatus superior, because most easily regulated. Most unquestionably the bark-bed is the simplest; but it requires occasional stirring and renewal, which may be inconvenient.

Whichever method may be fixed upon, there should be a raised brick-pit for applying it;—in the centre of the house, if it be a span-roofed erection, and forming the body of the house whether there be or be not a path at the back of the pit, in a structure with a lean-to roof. The height of this pit and of the paths must be determined by the height of the house, and the tallness of the plants intended to be grown. For plants of from one to three or four feet in height, the top of the pit should not be more than four and a half or five feet from the roof, and about three or four feet above the walk. Half a brick will be quite a sufficient thickness for the walls.

If bark is to be used, the bottom of the pit should be filled, to the depth of two or three feet, with pieces of the rough branches or roots of trees, mixed with some rough stones, in order to form a thorough drainage. On these, the bark should be placed to the depth of a foot or eighteen inches, according to the size of the pots to be plunged; and the actual depth of the pit will thus be four or five feet, for it should be filled a little above the surface-level, to allow for a little settling. When the heat of the new bark is somewhat subsided, and the whole is thoroughly settled, the plants may be plunged into it about half the depth of the pots, putting them in up to the rim after the temperature has been still further lowered. By the use of heat-sticks, the amount of heat may always be ascertained; and on its falling away considerably, the plants can be taken out, and the bark turned over. Subsequently, the addition of a little fresh bark will be necessary at each stirring.

Where heating by hot water is chosen, the pipes should be arranged in the lower part of the pit, and chambered in by thin slabs of stone or slate, which should be perforated to allow the heat to pass through them. A layer of gravel-stones, or broken free-stone, or rough brick rubbish, should then be placed on the partition thus made, and on that, again, there should be a layer of sawdust or bark which has lost all its fermenting properties, to plunge the pots in. This may be of any required depth. As a substitute for stone or slate to cover in the chamber, rude logs of wood, laid pretty closely together, may be found of service; and an open gutter may be used instead of the common pipes for heating, if it should be more approved.

To destroy wood-lice or other insects that may collect in the bark, sawdust, or whatever else is employed, the readiest plan is to pour boiling water over it when the plants are taken out for shifting, or when it is being turned over. Those disagreeable Fungi that likewise appear and spread so rapidly on bark, may be removed by the same means, even while the plants are in the bed, if the water be applied carefully, so as not to go near the roots. It will be of no use, however, if the water is not boiling at the time it is poured on.

The kind of plants which we have had in view almost exclusively throughout this paper, are those which require the temperature of a stove. Of these, Orchidaceæ will stand first; for they are perhaps the most benefited by bottom-heat, since plunging shelters their roots so thoroughly, and the atmospheric moisture obtained through watering the heating material is so congenial to their nature, while their notorious love of warmth is also thereby satisfied. From observation, and from the very nature of the plants, we can assert that no treatment induces such a beautifully healthy growth as that in which bottom-heat is a leading feature.

Various other sorts of stove-plants are included in our recommendation. There is the tribe which has succulent habits, such as the Gesneras and Gloxinias already mentioned, and for which bottom-heat is mostly thought essential. Then there are the handsome shrubs, such as Ixoras, Rondeletias, &c., to which a little bottom-heat is exceedingly advantageous; giving them altogether an improved aspect, and, by developing and ripening their wood more perfectly, increasing their production of bloom. There is further, the interesting class of climbers, which are often unfitted for blooming by being planted in some low corner, where their roots get too wet and cold. We know nothing so efficacious as bottom-heat (in connexion, of course, with other needful aids) in bringing climbers into a blooming state. It makes their wood healthy, and enables it to fulfil all its natural functions; and where this is done, the plants are sure to flower well.

We shall not, however, carry our enumeration to a greater length, as all stove-plants, whether coming beneath the divisions we have specified, or belonging to different tribes, will necessarily fall under the same rule; and when we glance at existing collections of these objects, and observe the comparatively trifling advance in their cultivation which has been made of late years, we can hardly hesitate to attribute it, in great part, to the neglect of bottom-heat. It affects not our argument in this or any other case to say that plants are made to look very well, to grow luxuriantly, and to flower vigorously without the aids of the methods we advocate. The question is, would they not be improved by the treatment we prescribe? And if they would,—as, we think, no one will deny,—it would be difficult to justify indifference to such superiority.

Far beyond the limits of stove-plants, however, will the principle extend which we have sought to establish. It will hold good of all plants, that keeping the roots adequately warm is indispensable to their perfection. And a strong case in favour of thorough drainage, as well as of keeping the roots of greenhouse species, and of plants in the open border, within the influences of the sun, will thus be made out. Stagnant or superfluous water always entails additional coldness; and a great rule is frustrated thereby. We have not space to enter more largely into this subject, and can therefore only throw out these brief hints as a kind of indicator of the direction in which inquiry would be profitable.

To go back to stove-plants, we must state that the period at which we would recommend the application of bottom-heat is simply during the spring, summer, and early autumn. The temperature of a bark or other bed should be suffered to die away gradually in the autumn; and if the plants are left plunged in it through the winter, they will need scarcely any water. Perhaps it would be the wisest plan to take them out in the autumn, level the bed, and place them on the surface, with pieces of slate, stone, or brick beneath them.

There is yet a material, however, of which we have not yet spoken, and which may be applied advantageously as a means of providing bottom-heat in stoves. This is the leaves of trees; which, if collected towards the end of the winter, and placed in the pit of the house about the middle or end of February, will furnish an excellent heat for two or three months. This will also be a good mode of facilitating the decay of the leaves, in order to form leaf-soil. They must be well watered at the time of being introduced, and the pots should not be plunged in them at first, lest the heat prove too violent. When this has become more moderate, they may be slightly turned over, and the pots may be inserted to the rim in them, as in bark.

Should the use of either leaves or bark be considered unsightly in an ornamental house, their surface may be readily covered over with a thin layer of bark, in a state of almost thorough decay, or of leaf-mould, or any light soil. This need not be employed so extensively as to render its mixture with the heating material at all objectionable, when the latter has to be stirred or turned over.

In every instance where bottom-heat is supplied, it is msot essential that it should never be allowed to become too strong, or to exceed the general temperature of the house. It is also indispensable that it be kept from getting into a dry burning condition, by frequent waterings on the surface. With leaves, especially, these states have to be vigilantly guarded against. Too powerful a temperature to the roots of plants would, when dry, have a highly prejudicial effect; and, if duly moist, the influence would be a kind of forcing, which is by no means to be desired, as it would entail general weakness and superfluity of growth.

It must likewise be a point in the cultivator's attention, that plants plunged in a heating material be not kept in pots of too small a description, or too long in the same place without examination; because, in consequence of the stimulus bottom-heat gives to the roots, these, if not duly furnished with room to extend themselves in the pots, will often grow through the aperture at the bottom, and extend themselves far into the bed. When they come to be removed from thence, the best supporters of the plant will, in such case, have to be entirely taken away; and, where the species is at all delicate, the specimen will be seriously thrown back.

Perhaps the simplest, easiest, and least questionable mode of giving bottom-heat to stove-plants in the summer, is by keeping them in pits or frames at that time, and filling up the houses with annuals and those other species which happen to be then in flower. It is at least certain that the trouble and expense of such a plan would be less, that the plants would be greatly advantaged by it, and that all houses seem most appropriately furnished during summer, when they are filled only with flowering objects.

If frames were selected for the purpose, the heat might best be derived from a dung-bed, made up like those for melons and cucumbers, and kept up to the required temperature by what are termed linings, after the heat of the bed itself had lessened. It is notorious how beautiful Gardenias and other plants flourish in a dung-heat; and there can be no doubt that most stove species would gain a verdure and healthiness in such circumstances, which are not to be obtained but by measures of this character.

IMPROVEMENTS IN GRAFTING CACTI

So extensively has the practice of grafting Cacti been adopted of late years, that it has ceased to be a matter of wonder, and no one would now be surprised to see any strange combination of the species of this tribe. As the experience of cultivators deepens, however, considerable modifications of existing systems are effected; and many of the older methods of procedure are laid aside, to make way for more approved plans.

Formerly, the *Pereskia aculeata,* from its decidedly woody and shrubby nature, and from its producing a goodly number of vigorous roots, was almost the only stock on which Cacti were grafted; the object of the process being to obtain a curiosity, or, in the case of some kinds, as *Epiphyllum truncatum,* to secure a more healthy condition for the plant by putting it on a less delicate stock, and one whose roots were less susceptible of injury. More recently, it has been ascertained that some of the stronger-growing kinds have the healthiest possible roots if potted in a richer and more suitable compost than the miserable soil which was once given them; and that, by using them as stocks, an important improvement in culture may be effected, concurrently with the attainment of additional safety to peculiar species.

By this comparatively new process, *Cereus speciosissimus* and even some of the yet larger sorts, have come to be habitually employed as stocks, and the common *Epiphyllum speciosum* is proved to be so greatly enriched by being grafted upon it, that the best culturists seem now to make this practice a rule among them. But, besides *E. speciosum*, the more specious *E. Ackermanni* and *E. splendidum*, with the seedling varieties that approximate to them in character, have been treated according to the same standard, and very beautiful objects they all become when thus managed.

We have seen them prepared after this fashion in several ways. First, there is the half-standard ; a variety in which the stem of the stock is cut off within about twenty inches or two feet of the base, and the grafts inserted on the top. These, after several years, and by a little pruning, form themselves into a fine large head, which, by the flexibleness of the branches, assumes an inclination downwards, which materially adds to the beauty of the specimen. Then, there is a form in which the stem is left considerably longer, so as to constitute, when the scions grow on its summit, a tall standard, less symmetrical than the last, but very curious and interesting. A kind in which the stem is still shorter than the first of these, while, when the scions grow freely downwards, they nearly hide that stem, is perhaps the most pleasing of the three forms thus specified.

A second division is created by having a specimen with several stems for the stock, and cutting all these down to about a foot from the edge of the pot, then inserting grafts both on the top of them, and down the sides. From three to five stems is the fittest number for the purpose ; and a plant, so grafted, would make, in time, a remarkably dense and bushy object, through which, when in flower, it would be impossible even for the eye to penetrate.

Of a yet different description is a specimen similar to the last, as regards the quantity of stems, though these, instead of being cut down, are trained spirally round a barrel-shaped trellis, from a foot to eighteen inches in diameter, and two feet high, either open or arched over at the top. These stems are stopped when they reach the summit, and grafts are then put into them, all over the outer surface, not more than two or three inches apart. A plant is formed in this manner, which, in point of splendour, has scarcely anything to equal it ; while, when the grafts have grown properly, the expedient that produced it is not discernible. In fact, if covered in at the top, it looks like an immense bush ; and, in favourable seasons, it will have hardly an inch of its surface unadorned with flowers.

The design of all these measures is to strengthen the stems and flowers of the species or varieties used as grafts, and to make them into specimens of a character which could not be otherwise obtained, or only by waiting an extraordinary length of time. Thus, the Epiphylla would never form standards, and would be a great many years in growing into large bushes, which, when actually produced, would most probably be bare at the bottom, and have a tendency to unhealthiness, that must yearly be on the increase. On the grafting system, however, large plants could easily be had in a few years, and the specimens, instead of decaying and getting shabbier in appearance, would annually grow healthier and more bushy, for a considerable time after arriving at a fine blooming state.

It would not, moreover, be the mere strength of the stock of *Cereus speciosissimus* which constituted its recommendation. That species is alike suitable for the operation, in consequence of its capacity, not only of enduring, but of flourishing better in, a highly nourishing soil, in which there is much decayed manure, and to which water, holding a large amount of manure in solution, can be liberally applied. It is on this account that it is chiefly valuable as a stock, because its richness will necessarily be imparted to the grafts, and the strength of the whole can so readily be kept up by artificial means.

But we wish to speak also of a plant which is much less used in grafting than the Epiphylla, and is more ordinarily grown in pots on its own roots. It is the *Cereus flagelliformis.* Conspicuous for being a creeping or pendent-growing plant, it will not succeed at all if treated as a climber; and many amateurs who are ignorant of this circumstance, or who do not know what to do with its stems when they hang over the edge of the pot, reaching down to the stage, and who never think of suspending it, fasten it to erect stakes, and thus spoil it.

Two or three years ago, we met with a nice method of treating this plant, as an object of curiosity, or where there is not convenience for hanging it up to the roof of the house. It is to graft it on strong stocks of *Pereskia aculeata,* from two to three feet high. It unites itself admirably to the more woody substance of that plant, and its drooping stems seem to be quite at home when hanging around such a stem. In three years from the time of grafting, some of them had grown nearly two feet in length, and the aspect of the specimens was really very pleasing. Unlike the Epiphylla, *C. flagelliformis* would not, we think, be fit for grafting on *C. speciosissimus;* since, however much vigour it might gain by the union, its stems are so slender that there would be a want of proportion between them and the stout stock on which it was growing.

As a rule, applicable alike to all descriptions of stocks employed in this manner, it must be stated that every shoot, whether from the base or any part of the stem of the stock, should be cut closely off immediately on its being noticed. Of equally universal application, as respects the scions, is the direction that either their points should be cut off at the time of grafting, or shortly after they begin to grow; and that they be cut back at any subsequent period, if they become too rambling or insufficiently bushy. It is most incorrect to suppose that such plants will not bear pruning, for, in the circumstances alluded to, they absolutely require it; although when they have once been induced to branch freely at the base, very little further reduction will be needed.

FLORICULTURAL NOTICES.

NEW OR BEAUTIFUL PLANTS FIGURED IN THE LEADING BOTANICAL PERIODICALS FOR JULY.

Canava'lia ensifor'mis. "Where there is ample room in a warm stove, this climber is well worthy of a place. It has generally been considered to be a native of Jamaica, sometimes of the East Indies; but, in this latter case, it seems to have been confounded with the *C. gladiata*, a truly Indian plant. Dr. M'Fayden, whose book is full of valuable remarks, observes, 'Sloane considers this species to be indigenous to the island of Jamaica, and says that the seeds were, in his time, used by some as food, and given to fatten hogs. I do not find, however, on inquiry, that any use is, at present, made of them, except that they are commonly planted by the negroes along the margin of their provision grounds, from a superstitious notion, probably of African origin, but very generally entertained, that the 'overlook' (which is the trivial name of this plant) fulfils the part of a watchman; and, from some dreaded power ascribed to it, protects the property from plunder.' The above notion of its being a native of Africa, seems to be confirmed by the fact that seeds were sent to Mr. Veitch, of Mount Radford, Exeter, from Ashantee, together with those of many other native plants. It flowered in Mr. Veitch's nursery, in November, 1842." The plant is considered an annual, with handsome foliage, and reddish purple flowers, very like those of the common Sweet Pea. *Bot. Mag.* 4027.

Dendro'bium cucumer'inum. "A native of New Holland, whence it was sent to Messrs. Loddiges, from Mr. Wm. Mac Leay. Of the locality for it in that country we are uninformed. It very much resembles a heap of little cucumbers, whence the name has been derived. Those bodies are *apparently* leaves, terminating the short articulated stems; but they require further examination, for they *may* be of the nature of pseudo-bulbs. The flowers appear from the base of the cucumbers in threes. They are dirty white, with long narrow sepals, and petals striped with pink, and a three-lobed lip, whose middle division is crisped very much, and fine wavy elevated ridges along its centre." It is a most curious little plant, adapted for growing on a log of wood. *Bot. Reg.* 37.

Ly'caste pla'na. The genus *Lycaste* is a division from *Maxillaria.* This species is "a Bolivian plant, imported by Messrs. Loddiges, with whom it flowered in October last. It is conspicuous for the large size of the leaves, and is, in fact, very near *L. macrophylla*, from which it differs in the petals being quite even, not undulated, and in the lateral sepals being much more exactly oblong; added to which is a greater degree of bluntness on the tubercle of the lip. The beauty of the flowers of *L. plana* is far greater than the *macrophylla*, which wants the rich red wine-colour of the plant before us." It is cultivated in turfy peat, in a warm-house, and no part of the pseudo-bulbs should on any account be buried in the soil. *Bot. Reg.* 35.

Marce'tia excoria'ta. "This genus consists of a group of curious little Melastomaceous plants, having almost the habit of heaths. They are all found in tropical America, in mountainous places, or in elevated sandy deserts, and give a peculiar feature to the places where they grow. In our gardens they are almost unknown; that here spoken of, from the collection of his Grace the Duke of Northumberland, at Sion, being the first that we have met with in cultivation. It will succeed best in a stove, potted in one half leaf-mould, mixed with loam and sand in equal parts. A good drainage is necessary, and plenty of water at the roots at all times. While in flower, syringing should be dispensed with altogether, for the moist atmosphere in a stove is quite sufficient. After the flowering season is over, the plant should be cut back; at least all slender branches should be removed, in order to produce a supply of young wood for flowering the following year. It is propagated by cuttings." The species has small opposite leaves, and numerous pinkish-white blossoms. *Bot. Reg.* 31.

Mormo'des luxa'tum. "In mentioning the existence of this singular plant," says Dr. Lindley, "we some time since spoke of it thus:—'When Mr. Ross, the collector to G. Barker, Esq., of Birmingham, was in the neighbourhood of Valladolid, in Mexico, there was brought to him some masses of a plant reported to be of great beauty. They arrived safely in England, and one of them has at last flowered, proving to be this species; a most extraordinary plant, of large size, of a stately habit, with a very delicious fragrance, although powerful, but with no brilliant colours to render it what *we* call handsome. Its flowers are three inches in diameter, pale lemon colour, fleshy, rather globular, but so distorted by the complete dislocation of all the parts, that it would be difficult to ascertain their real nature, if it were not for the token given by the labellum. The latter has a deep brown streak drawn down its middle, and covers over the column like a hood. The leaves of the plant are about three feet long, narrow, deep green, with a very fine glaucous bloom upon their underside. It is worthy to be associated with even *Sobralia macrantha* in the choicest of all collections of these plants," and is cultivated like the Cataseta. *Bot. Reg.* 33.

NEMATAN'THUS LONGIPES. In the Botanical Magazine, this name is given to the plant already figured by us as *Columnea splendens.*

OXYLO'BIUM OBOVA'TUM. "As an addition to the hard-wooded Australian shrubs with yellow pea flowers, this is acceptable, and forms a pretty greenhouse plant, which lasts in blossom for some time. It is the species intended by Mr. Bentham by his *O. cuneatum,* as we have ascertained by comparing it with one of the original specimens from which his specific character was formed; but we cannot regard it as distinguished from *O. obovatum,* and, as that name has been applied to it in the nurseries, we adopt it in preference. It is best cultivated in a soil which is rather poor, composed of very hard loam and heath-mould, and should be kept in a cold pit, where it is quite secure from frost during winter." It was figured from Messrs. Low and Co., of Clapton. *Bot. Reg.* 36.

PORTULA'CA SPLEN'DENS. "We presume this to be a mere variety of *P. Thellusonii,* but if so it is one of singular beauty. Its origin is, however, unknown to us. Seeds of it were purchased of Mr. Charlwood, in Covent-garden, for the Horticultural Society; and in the Chiswick garden it flowered in the autumn of 1842. It is a charming tender annual, about a foot high, which flowers most abundantly from July to September, and is adapted either for the greenhouse or for the open border in summer." The flowers appear to be of a very deep rich crimson, and similar in form to those of *P. Thellusonii.* The seeds should be sown about the middle of March.

TRO'LLIUS ACAU'LIS. "Among the most curious plants that have been procured for our gardens by the liberality of the East India Company. It has, in many respects, the appearance of a little *Eranthis,* of which it will probably prove the summer rival, for it does not flower till July. Whether or not the flowers will always preserve their dwarf stature, or whether, as it becomes stronger, this species will elevate itself a little more, cannot at present be ascertained. This is remarkable in it, that the flowers are not globose as in the old species of *Trollius,* but spread open in a starry manner, like those of our Anemone. The petals are deep orange; the carpels are fifteen in number. It is a neat, yellow-flowered, hardy herbaceous plant, growing freely in a mixture of sandy loam and peat, and in rather a damp situation. It is increased either by seeds, or by dividing the old plants; but the young plants grow but slowly at first, and will not flower before the second season." *Bot. Reg.* 32.

NEW OR INTERESTING PLANTS RECENTLY IN FLOWER AT THE PRINCIPAL SUBURBAN NURSERIES.

ACHIM'ENES MULTIFL'ORA. This showy plant is now flowering at Mr. Glendinning's nursery, Turnham Green. It is part of Mr. Gardner's Brazilian collection. The plant is a good deal like a *Mimulus* in appearance, having smooth leaves, which are irregularly jagged at the margins, and numbers of handsome lilac, partially fringed flowers, collected almost into a spike towards the top of the stems. It is said to be an annual; but this is probably doubtful.

ACRO'PHYLLUM VEN'OSUM. Although, when but indifferently grown, this species possesses little that is attractive, it becomes, under congenial treatment, an exceedingly beautiful plant, as has been shown in several places this season. Its dwarf character, and its long feathery spikes of whitish flowers, which are slightly tinged with reddish, and last in bloom at least a month, render it a most ornamental greenhouse plant. It should be grown in a rather enriched loamy soil, which is very turfy, open, and well drained, and must not be stinted for pot-room. The cuttings from which it is propagated ought always to have the tops cut off, or the same operation should be performed early on the young plant to render it branchy at the base.

Ae′rides a′ffine. One of the finest and most graceful plants of its class; bearing long branching racemes of deep pink and white blossoms. It has much of the character of the lovely Saccolabiums, though the floral racemes are longer and branching, while the individual flowers are larger and have a looser and more flowing arrangement. It has lately flowered in a very superior style at Messrs. Rollisson's, Tooting.

Cala′nthe Mas‵uca. A very handsome Indian species; probably one of the showiest of the genus. It has strong and stiff, yet comparatively short spikes of flowers, the individual blossoms being large and deep pink, with a dark pinkish purple lip. The latter changes its colour to brownish as it fades. It is very finely cultivated by Messrs. Rollisson, Tooting, and is at present blossoming freely in their Orchidaceous house. The same plant continues blooming for two or three months.

Cyrto′ceras refle′xa. First named *Hoya coriacea*, but since changed to the above; this elegant plant blooms nearly all the season with Messrs. Loddiges, of Hackney, who first introduced it. It is a pleasing, low-growing shrub, with very fine leaves and large bunches of whitish waxy-looking flowers. These are drooping, like those of *Hoya carnosa*, yet more densely produced, with considerably reflexed instead of flat segments, and very nearly white without a shade of pink, besides being a little yellowish in the centre. It is a most valuable stove ornament.

Er‵ica Cavendishi‵ana. Allied to *E. depressa*, both in habit and inflorescence, but very distinct from it, and much superior. It was raised by Messrs. Rollisson, of Tooting, a few years back, and named after the Duke of Devonshire. The plant is a free-grower, with deeply verdant foliage, and rich yellow flowers. It yields admirably to culture, and becomes, under good treatment, one of the handsomest of Heaths. Messrs. Rollisson and others have had it in bloom for several weeks.

OPERATIONS FOR AUGUST.

At this season of the year, the Petunias, Verbenas, &c., that are planted in the flower-beds, will evince a disposition to grow too rampant, and spread beyond the boundary allotted to them; encroaching on the turf where the beds are separated by grass, or on the box-edging, where they are surrounded by one. In the first case, it is desirable that they should not descend on to the grass, which they would somewhat injure, besides destroying the outline of the bed, and merging it too completely into the lawn; while, in the other, it is alike necessary that they should not cover the box, as they would do it much harm by their shade, and very probably kill some of it, thereby making it irregular. To keep them within due bounds, however, it will not do to cut them with shears, or with a knife in the same manner; but the principal shoots should be severed farther within the given space, leaving the smaller ones, to take off the appearance of pruning. These, again, must be cut back when they grow too long, in the same way, still having a succession of shorter ones to furnish a more natural and easy outline.

Some evergreen shrubs, particularly common laurels, are so much inclined to grow rambling, and are with such difficulty kept in a close bushy state, that it is well to prune them now, besides pruning them in winter or spring. By cutting back some of the most prominent shoots, they will be induced to throw out a number of laterals again before winter, and the general compactness of the bushes will be much promoted.

We have lately observed, in many places, that the numerous seed-pods have not been removed from the Rhododendrons, even where the plants are not in a strong or healthy condition. In such cases, it is of considerable use at once to cut them off, for the vigour of the shrubs will be greatly increased by the operation. As Rhododendrons are now fast maturing their growth, it should not be delayed for a single day. The benefits of the process will be apparent in the following season. Where there are choice specimens of Portugal laurels, too, it may be worth while to remove all the old flower-stems before the berries are formed. These shrubs have flowered in unusual abundance this year, and will assuredly be strengthened by being prevented from ripening their fruit. It may appear a very troublesome business to those who are content to leave their gardens to Nature's tendance ; but they who wish to cultivate them will willingly adopt any such expedient by which they may be improved.

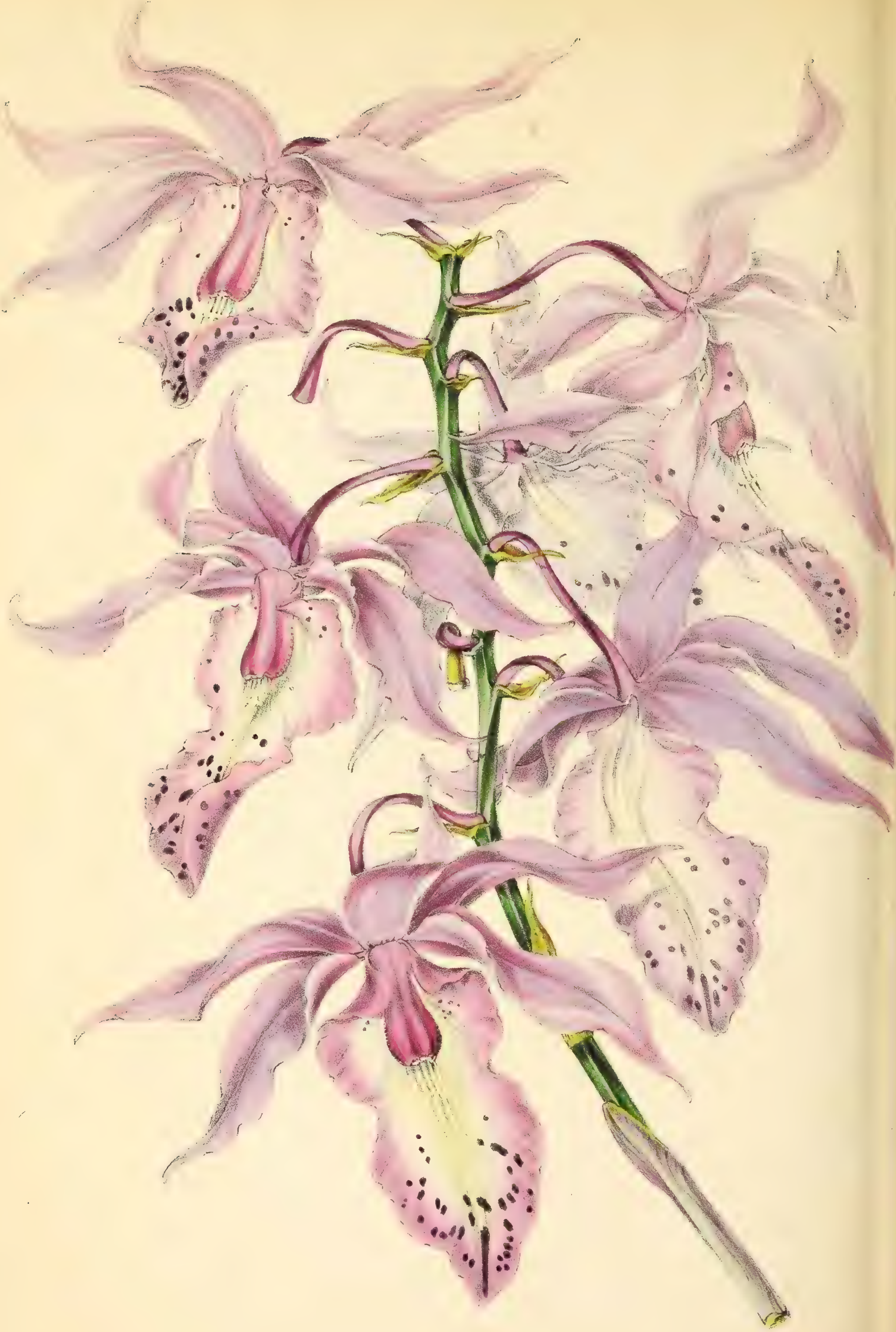
What has thus been said extends to most shrubs and flowers in the hardy department. Sweet Peas will bloom again if their flowers are plucked as they fade. Sweet-williams will flower well through another season, when their decaying heads of blossom are taken away. Mimulus cardinalis will flower in the autumn, if its recent flowering shoots be cut off. Stocks bloom a second time, provided their inflorescence is cut early, just as it begins to wither. China Roses blossom afresh under the same treatment. The bulbs of Lilies, &c., are strengthened if their flower-stems are severed before they commence seeding. Single Rockets, Larkspurs, and many others, flower a second time, and every kind of herbaceous plant is benefited, by having its flowers abstracted as they die ; while, independently of this, the garden is rendered much more tidy by their removal. Indeed, it cannot be kept neat without such attention.

But the advantages of the practice do not cease with hardy plants. All fruit-bearing ornamental species, the seed of which is not desired, should be spared the exhaustion of developing it ; and no fruit, save that which is in itself ornamental, ought to be seen in the greenhouse and stove. The berry of *Columnea Schiediana* is a pleasing object ; but it greatly weakens the plant. Those of Fuchsias ought to be plucked off in an early stage. And so on through all the tribes, taking in the Pelargoniums, &c., that are in the flower-beds, and, in the majority of instances, cutting off the flowers as soon as their beauty wanes, before there has been time for fruit to form. Among the house Pelargoniums, too, if, instead of pruning them all at this time, a few of the smaller specimens that have not flowered very abundantly were simply to have their old blossoms plucked and be taken to some half-shaded spot, under an east or west wall, and there plunged in the border, still keeping them in their pots, they might bloom again in the autumn, and come in then as acceptable ornaments to the greenhouse.

This is the proper period for budding Roses and other plants that are to be thus multiplied. In addition to the usual kinds which are budded on standards, it is a good practice to put a few of the more compact-growing climbers on standard stocks. When they grow, they will necessarily take a pendent character ; and, if slightly pruned, they will make very beautiful objects for the lawn, creating a fine variation from the more formal-headed ones commonly seen.

It is also the season for propagating Pinks, Picotees, and Carnations, where they have not yet been attended to. The first kinds are increased by cuttings, usually called pipings, which will strike in sandy soil, under a shaded hand-glass, in front of a south wall. The Picotees and Carnations are multiplied by layers, pegging the best shoots down into some light soil prepared for the purpose, and running a sharp knife through that joint which comes nearest the actual bend. None of the leaves, either of Pinks or these plants, should be at all covered by the earth.

Greenhouses and stoves may now have more air, and attention should be given to hardening the wood of the young shoots, and preventing them from growing afresh, by free exposure to light and air, and by a more cautious supply of moisture. The syringe or the small engine will occasionally be useful, to invigorate the plants, and wash off any insects that may make their appearance.



S. Holden, del & Lith.

Barkeria spectabilis.

BARKÈRIA SPECTÁBILIS.

(Remarkable Barkeria.)

Class.	*Natural Order.*	*Order.*
GYNANDRIA.	ORCHIDÀCEÆ.	MONANDRIA.

Generic Character.—*Sepals* and *petals* equal, free, membranaceous, very spreading. *Labellum* smooth, entire, naked, cuneate and pointed, pressed close to the column. *Column* petal-shaped. *Anthers* four-celled, fleshy. *Pollen-masses* four, with as many ligulate reflexed caudiculæ, connate in pairs.

Specific Character.—*Plant* an epiphyte. *Stems* cylindrical. *Leaves* lanceolate, acute, fleshy, a little tinged with reddish brown. *Raceme* loose, many-flowered. *Sepals* linear-lanceolate. *Petals* ovate, acuminate. *Labellum* ovate-lanceolate, three-keeled.

For the introduction of this species, which is one of the most lovely of Orchidaceæ, cultivators are indebted to G. U. Skinner, Esq., whose exertions in stocking the country with fine plants of this charming tribe are familiar to every grower.

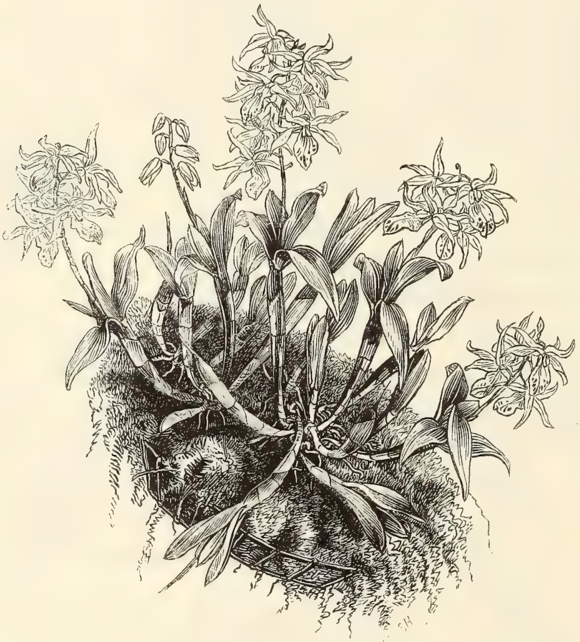
Writing about it in the Botanical Register, Dr. Lindley remarks that, "under the name of Flor de Isabel this plant forms one of the votive offerings of the Guatemalese. It forms a tuft of cylindrical stems about four or five inches high, each of which bears two fleshy lanceolate acute leaves, separated from each other by intervals of about an inch. The raceme rises out of some brown dry sheaths, and in the plants that have flowered bears about six most lovely nodding blossoms; but, according to Mr. Skinner, it varies in length from three inches to a foot, producing as many as twelve flowers in a raceme. The expanded flowers are nearly three and a half inches wide, their colour is a bright lilac; the labellum is white at the base and in the middle, lilac at the edge and point, and richly marked with small blood-red spots. Along its middle, below the column, are five purple lines, which pass into three elevated colourless ridges, beyond the place where the anther touches the lip. It is with Cattleyas and such beautiful plants, that this charming species is worthy to be arranged."

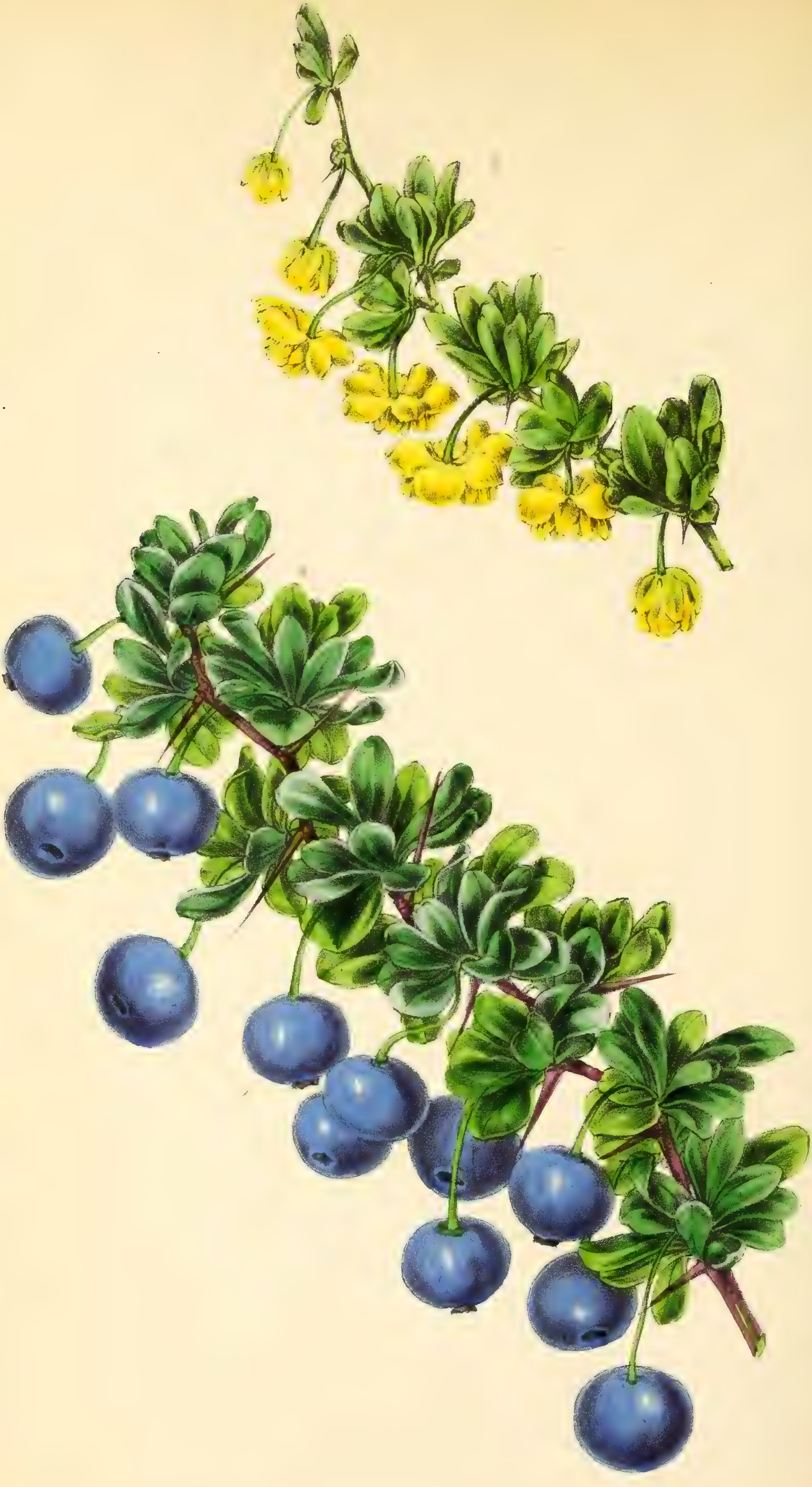
We owe our drawing to the obliging attention of Mrs. Wray, Oakfield, near Cheltenham, whose gardener, Mr. J. Brewster, we have also to thank for the following particulars. "The plant was imported from Guatemala in July, 1841, when it immediately began to grow; and, late in autumn, it showed flower-scapes, but the season was too far advanced to bring them to perfection. It then remained dormant, and lost all its leaves, till March, 1842; when it again commenced growing, and expanded its first flowers on the 12th of June. These were shown at Chiswick in July, and continued perfect for five weeks.

"The temperature in which the plant was grown was never above 65°, when it could be kept under by giving air freely; while, in winter, it often fell below 40°. Indeed, my only object was to keep out the frost; and I invariably gave a little air whenever it could be done with safety. In the summer, the windows and doors of the Orchidaceous house are open every day; and I am of opinion that the Orchidaceæ of Guatemala cannot be kept too cool in this country at that time, for the more air I give, the better they grow. I always, however, keep the house damp."

The plant was cultivated by Mr. Brewster in an open wooden basket, filled with moss. It will likewise succeed on a block of wood. Nothing could be more perfect than Mrs. Wray's specimen; and the advantages of the summer air to the plant can hardly be over-stated.

As we are only able to give the flowers in our drawing, we subjoin a woodcut of the whole plant.





Berberis dulcis

BÉRBERIS DÚLCIS.

(Sweet-fruited Berberry.)

Class.
HEXANDRIA.

Order.
MONOGYNIA.

Natural Order.
BERBERÀCEÆ.

Generic Character.—*Sepals* six, guarded on the outside by three scales. *Petals* six, with glands on the inside of each. *Stamens* toothless. *Berries* two to three-seeded. *Seeds* two, rarely three, laterally inserted at the base of the berries, erect, oblong, with a crustaceous coat, and fleshy albumen; cotyledons leafy, elliptical; radicle long, capitellate at the top.—*Don's Gard. & Bot.*

Specific Character.—*Plant* a spiny evergreen shrub. Spines long, slender, simple, or three-parted. *Leaves* obovate, obtuse, with or without a bristly point, entire, glaucous on the under side. *Flowers* solitary, on slender stalks twice as long as the leaves, drooping.

Our object in producing a figure of this beautiful shrub, which has now been in the country about thirteen years, is to show how very ornamental it is when covered with its handsome fruit, and to press our readers to cultivate it more, with a view to the production of that fruit.

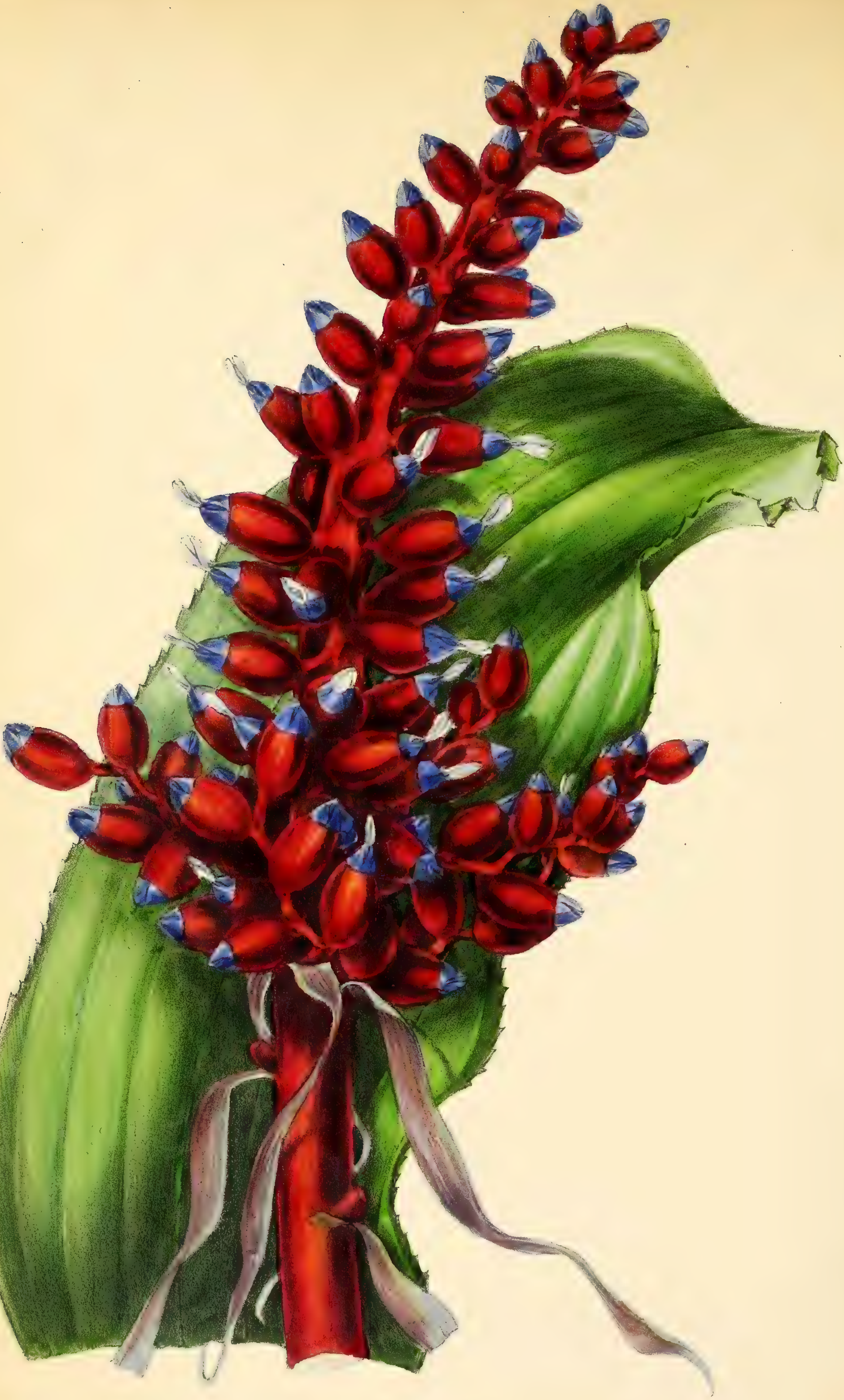
There are many of the species of this tribe, from the common Berberry to the more novel and showier Mahonias, which are extremely pleasing as fruit-bearing shrubs; and, indeed, excite more interest in that character than they do while they are in flower. A large bush of the *B. vulgaris*, for example, grown upon an open lawn, is particularly attractive when laden with its numberless drooping racemes of pretty red berries; and the fruit of some of the Mahonias has quite as rich an appearance as Grapes on a Vine, (only being much smaller,) with a yet more inimitable *bloom.* Indeed, the latter is so perfect that it is impossible to describe it either with the pen or the pencil.

The species before us is an evergreen shrub, of a rigid habit, sometimes attaining the height of four or five feet, but more generally keeping about three feet high. Its branches are a little inclined to turn downwards towards the top, and bear a considerable number of spines, with clusters of small foliage. The flowers issue from amidst the tufts of leaves, and are solitary, drooping on long stalks, large, bright deep yellow, and more expanded than in some other species. They are succeeded by fine roundish berries, of a rich purple tint. The blossoms appear from March to June, and the berries ripen in August. When ripe, the latter have a most delicious flavour; and they are used, both in the green and ripe state, for making tarts and preserves, which are said to be excellent, in the native country of the plant.

It is an inhabitant of the Straits of Magellan, and, in Britain, is entirely hardy. There is no difficulty whatever about its culture, as it will flourish in any garden soil. It seems to thrive best, however, in an open loam. Young plants are most readily obtained either by seeds or suckers, both of which are borne profusely.

Although by no means peculiar in regard to situation, it is better to place it where there is plenty of light and air. Towards the front of a shrubbery border is a fit place for it; but it deserves to be planted on a lawn, and encouraged to form a spreading bush. To promote this object, the soil in which it is put should be well turned up and lightened before it is planted; and, if unsuitable, some fresh loam should be substituted for it. It will not thrive well in a wet or low locality.

The subject of our drawing flowered and fruited most liberally at Messrs. Young's, Epsom, last year. There is a good collection of the genus at this nursery.



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Æchmea fulgens

ÆCHMÈA FÚLGENS.

(Brilliant-flowered Æchmea.)

Class.
HEXANDRIA.

Order.
MONOGYNIA.

Natural Order.
BROMELIÀCEÆ.

Generic Character.—*Bracteæ* five, connate into a cup. *Calyx* superior. *Petals* convolute, distinct, scaly at the base. *Stamens* inserted in the base of the perianth. *Style* filiform. *Stigma* linear, convolute. *Capsule* a berry. *Seed* naked.

Specific Character.—*Plant* an herbaceous perennial, probably somewhat epiphytal. *Leaves* clasping each other at the base, somewhat sword-shaped, terminating rather abruptly, a little pointed, with small prickly serratures along the margins. *Spike of flowers* short, stout, erect, with a rich scarlet stalk, a little branched. *Flowers* oval-shaped, deep scarlet, blue at the summit.

This showy plant, which is probably one of the finest and best of the Bromeliaceous order, was introduced to the Garden of Plants, at Paris, by M. Eugène Melinon, who obtained it, we believe, at Cayenne, in South America, where he was curator of some public garden. It was brought from Paris to the collection of His Grace the Duke of Devonshire, Chatsworth, by the same individual, in the spring of 1842, at which time it was in flower; and from that plant our artist made the drawing now given.

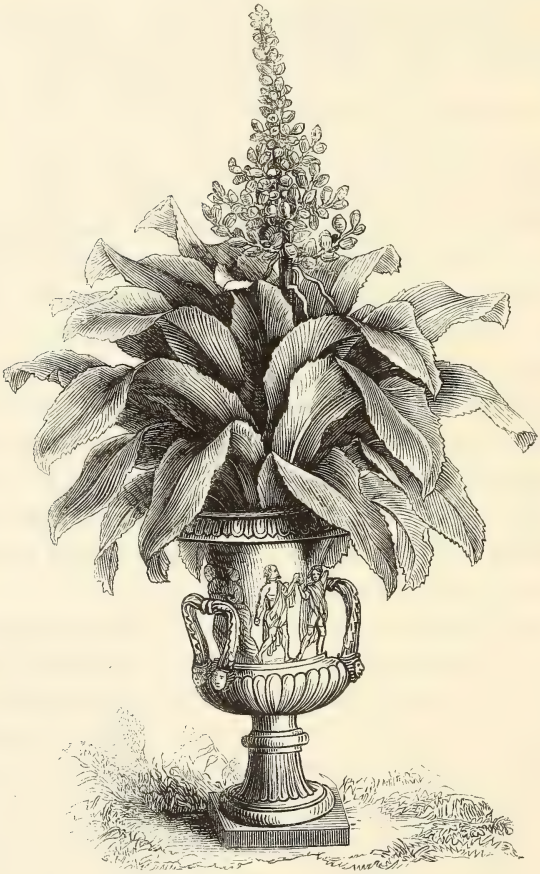
It has not since bloomed at Chatsworth, but from shoots which it is now producing, blossoms are again expected during the present month (September). It is not so straggling as many plants of this class; and the flower-spikes are more compact than usual, while the flowers possess the brilliant colours common to many Bromeliaceæ, besides being of a greater size. Scarlet and blue, both very deep and rich, are the principal tints in them.

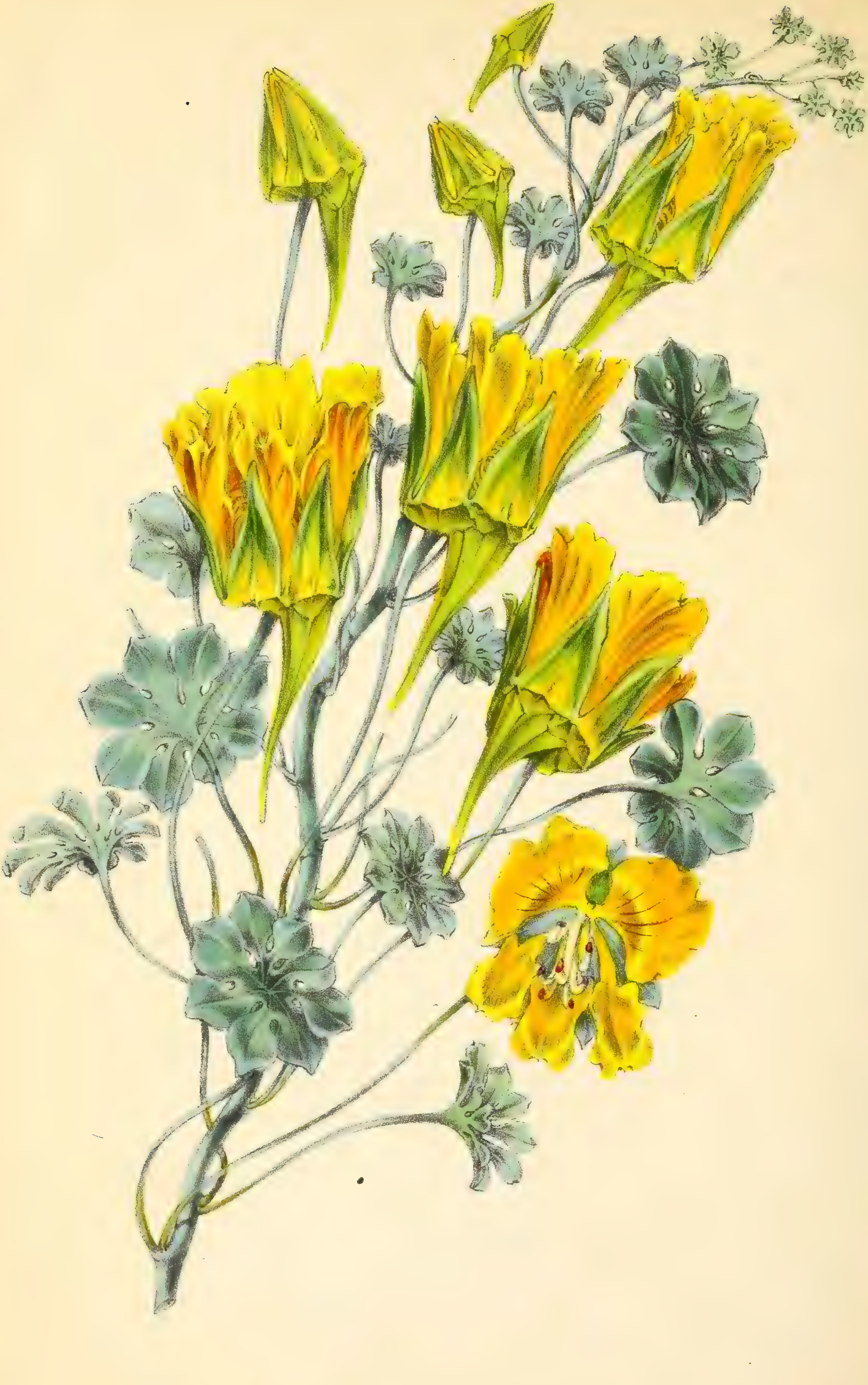
Beyond its more pleasing proportions, however, and showier inflorescence, it promises to be a more manageable plant than most of its allies in point of culture, appearing to bloom with considerable freedom. It grows vigorously in a light and sandy, yet rather rich soil; and a compost of open loam and leaf mould, in equal proportions, would doubtless be very suitable. It is necessary to water it very sparingly when in a torpid state; though it requires a tolerable share of fluid while growing, and should be freely syringed. The best way of treating it, in the summer, is, most likely, to plunge the pot containing it in a bark or dung bed, supplied with bottom heat.

Being, in all probability, partially epiphytal, it would no doubt succeed in a suspended basket, filled with either very turfy loam or heath mould, or moss, and watered liberally during the growing season. It would have a more interesting aspect in this condition; and a better opportunity would be given for keeping it properly dry in winter. On the last-named circumstance its flowering must greatly depend. Suspended amongst Orchidaceæ, it would help to produce an agreeable diversity in the house.

The plant is propagated by suckers, which it throws up freely, in the manner of the Pine-Apple; to which, in fact, it is related, and would do with similar treatment.

The generic name is taken from *aichme*, a point; the calyx of the flowers having very rigid points.





S. Holden, del & Lith.

Tropæolum polyphyllum.

TROPÆOLUM POLYPHÝLLUM.

(Many-leaved Indian Cress.)

Class.
OCTANDRIA.

Order.
MONOGYNIA.

Natural Order.
TROPÆOLÀCEÆ.

Generic Character.—*Calyx* five-parted, upper lobe furnished with a spur. *Petals* five, unequal; three lower ones smallest, or vanished altogether. *Stamens* eight, free from the base. *Carpels* three, somewhat erose, kidney-shaped, indehiscent, furrowed, roundish. *Seed* large, filling the cell.—*Don's Gard. and Botany.*

Specific Character.—*Plant* an herbaceous perennial. *Root* a tuber. *Stems* numerous, strong, ascending erectly, not at all twining. *Leaves* very abundant; leaflets five to ten, oblong or obovate, connected at the base, diverging pretty regularly from the centre, glaucous. *Petals* unguiculate, rather longer than the calyx, obtuse, entire, deep yellow.

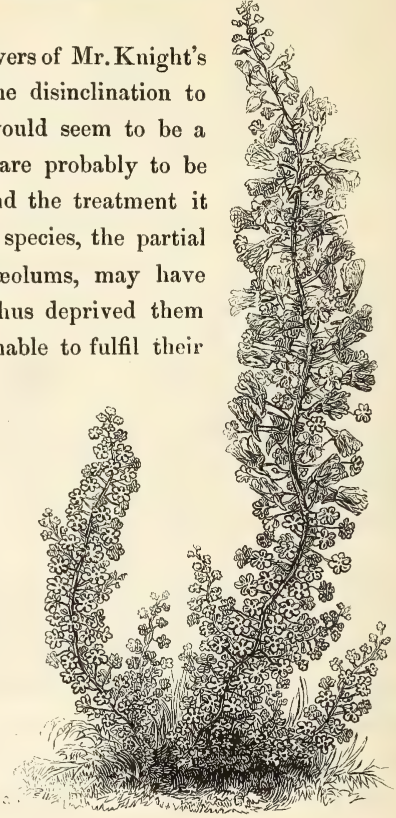
Long known to botanists by descriptions and dried specimens, and a plant which it has, for some time, been considered desirable to obtain. When *T. edule* bloomed last year, it was at first thought to be the *T. polyphyllum;* but further examination showed that this view was a mistaken one, and that the *T. polyphyllum* had yet to be made public, though it had actually blossomed in England one or two years previously.

The genuine *T. polyphyllum*, of which we here present a representation, was imported by Mr. Knight, of the King's Road, Chelsea, from some part of Bolivia, or Upper Peru, about four years since, having been gathered there by Mr. Kelly, a collector to Mr. Knight. It flowered at the Exotic Nursery, Chelsea, in the summer of 1839 or 1840, at which period we had the annexed drawing made; but as the plants ceased blooming rather suddenly, and as it has not again blossomed till June last, we reserved our figure till it should flower more perfectly. That point having now been gained, we can publish it with greater confidence, as depicting a beautiful and meritorious plant.

While it certainly does resemble *T. edule* in the flowers, it is a very different species in its habitude. The stems are more numerous, very much stronger, grow with greater erectness, have to all appearance nothing of the twining character, and bear their leaves far more densely. The latter, too, have broader leaflets, which are less loosely and more regularly disposed, and are glaucous on the upper surface. By all these characteristics it is most easily distinguished; and the flowers being axillary, are, from the greater closeness of the leaves, much less scattered. They are of a deep yellow or orange colour, with a rather long spur to the calyx.

From the rapid manner in which the flowers of Mr. Knight's specimens went off the first year, and the disinclination to bloom the plants have since evinced, it would seem to be a shy-flowering species. Still, these things are probably to be accounted for by the nature of the plant, and the treatment it had received. As it is a strong-growing species, the partial exposure of the tubers, as in other Tropæolums, may have exhausted the specimens too much, and thus deprived them of their natural vigour, rendering them unable to fulfil their regular functions. At any rate, this is the view we take of the matter; and should advise that the tubers of the plant be always placed beneath the surface of the soil. If planted to the depth of an inch, the specimens will no doubt be improved. This is the chief feature demanding notice in the culture of the species; as it may otherwise be managed like the rest of the genus, only it does not need so much training, having a more erect mode of growth.

It is increased by cuttings of the young shoots, before they have advanced to a flowering state; and if the principal stem of a plant be cut down while young, a number of others will sprout up from the tuber, and yield an abundance of cuttings.



GARDENING AS A SCIENCE.

No. VIII.

We made allusion in our late article, No. 6, to the utility of leaves for almost all the purposes to which manure is applied, inasmuch as they contain the elements of vegetable organization. And a few general remarks were then offered on a plan adopted at one establishment for the alternate production of strawberries and melons in a bed of earth consisting chiefly of decayed leaves.

For a work devoted to Floriculture, it is not strictly in keeping to enlarge upon the operations of the kitchen-garden; the few more particular remarks which the subject calls for, must therefore be restricted to the agency of vegetable matter upon ornamental plants exclusively.

It would be most fortunate could we correctly ascertain, and demonstrate, the effects which certain modifications of decaying organized substances produce upon certain plants: take as an example the *Hydrangea hortensis.* Occasionally a specimen with blueish flowers is met with: blue they are not, the hue they assume being that of a French gray, or fading lilac; but as a variety, numbers of inquiries have been made, and pretended answers given, not one of which appears to be relevant to the subject.

We are assured by a nurseryman, whose word is veracious, that there is a species of heath-mould miscalled *peat*, which, beyond a doubt, has converted the pink tint of an Hydrangea into blue. The fact may be so, or it may not; but we have an example now of a plant in bloom, which proves beyond question, that a very fine, strong Hydrangea, transferred to pure Bagshot heath soil, will prosper therein exceedingly. This plant has upon it two large heads of *pink* flowers, not in the least altered by the change of its soil. But if the bloom be the same, the foliage is astonishingly improved: each leaf is very large, firm in texture, and of an intense, full green, totally different from the yellow hue which results from the use of loam.

This luxuriance and verdure evince that to the black vegetable matter of heath soils, though it amount to little more than one-tenth of their substance by weight, we must ascribe their nutritive power. Our repeated analyses, more than once referred to, have also proved that the remaining nine-tenths of the earth consisted almost entirely of white, or silver sand. We know also that the verdure of Camellia Japonica is exalted by the use of black bog earth (heath soil), and therefore we consider one principal point in the science of Floriculture to be unquestionably established.

The exposure of erroneous inferences is, or ought to be, a primary object in all physiological investigations: and thus, in discovering the efficacy of vegetable earths, we have detected the fallacy of the theory which had ascribed the change of tint in Hydrangea to the presence of iron in the soil.

While perusing three different directions for effecting the desired change, we perceived that it was the object of two of the experimenters to introduce by the roots a quantity of some salt of iron into the organism of the Hydrangea. One writer directs pure black " peat,"and to water occasionally with a solution of alum: another employs sandy *yellow loam* as the staple, blending with it a quantity of fresh sheep-droppings; the third uses black heath mould, which he calls *peat;* and subsequently waters with an aqueous solution of the same earth. Now, alum is a *super acid,*—sulphate of alumine, and potass; and therefore, the excess of acid presumes the possibility of dissolving a portion of the iron contained in the black peat, while in the second case, the yellow loam is supposed to furnish an abundance of the oxide of iron. But heath-mould contains very little iron; and as to the oxide of the loam, it exists in a condition not to be dissolved by water.

There is fallacy therefore in all these modes of operation; and if ever the transition of colour have been effected thereby, it must be referred to the vegetable matter (*humus*) of the heath soil, and to the gradual conversion into *humus* of the sheep-manure combined with the loam.

As a blue-flowering Hydrangea, though rarely seen, may be an object of interest with many amateurs, a very simple experiment may be tried, which, if it be not successful in its direct object, will assuredly produce a marked change in the character of the foliage. We saw such a plant, above ten years ago—the only one in the vicinity; and since we commenced this article, had an opportunity to converse with the gardener who grew it: the process he thus described:—

A very young plant—say a well-rooted cutting—is cleaned from every particle of earth, and transferred to a small pot containing black heath soil (he pointed to our own heap of earth from Bagshot) mixed with a portion, perhaps one fourth, of very old, decayed cow-dung. Its truss of blue flowers was, we were assured, produced by this process; the plant, however, was given away, and removed to a distance, and he never possessed an Hydrangea since that time.

The question of a blue Dahlia was agitated for years, and at length appears to be entirely abandoned. It is of little moment, because, if dependent upon soil, the change, when effected in any individual instance, could never be maintained in soils varying with every locality. But as blue is a primitive prismatic colour, and apparently connected in some mysterious way with magnetism, it might not be trifling to suggest that some modification of electricity, or electro-magnetism, would perhaps be found to influence the colouring principle of flowers.

We are so profoundly ignorant of the nature of vegetable sap, that we are unable to apply any rational argument to its course or future functions. It has been fashionable of late years to ascribe absorbent powers to the leaves, and some experiments have been brought to bear upon the theory; but it should be recollected that all such experiments have been performed within glass vessels, wherein a plant or portion of a plant has been exposed to light, to the energy of chemical gases, to—in a word—a number of agencies, natural and non-natural, quite at variance with the laws of growth and development. A spirit of research is estimable, and may lead to discoveries; but what conclusion in any degree satisfactory can be attained, when the means are opposed to the principles of nature?

Thus it happened some years ago, when physiologists endeavoured to discover the conducting vessels of the sap by the immersion of juicy cuttings of trees and shrubs into coloured infusions: the colouring matter passed into the cellular system, ascended, and was traced into the leaves. But *the cuttings were mutilations*, and thus afforded no correct natural evidence. That great philosopher, Mr. Knight, felt the truth of the objection, and a few years before his decease, alluding to an experiment by Amici, which had excited much interest, wrote thus upon what he styled "the folly and extravagance of the inferences drawn" therefrom:—"A small detached part of a plant growing naturally under water" (Chara) "is so placed, that one of its sides is subjected to the action of intense light, and probably, considerable heat, if solar light be used; and the fluids are seen to rise on the illuminated side, and descend on the other. A part of the body of a *leech* subjected to the same treatment, would have afforded nearly as good evidence respecting the motions of the blood in the *human body*."

While it remains an undoubted fact that dark fluids will ascend through mutilated channels, and produce defined dots and streaks in parts far remote from their lower extremities, it is equally certain that in plants of tissue so lax and juicy as that of the *balsam*, not a particle of colour can be introduced by the roots, however long they may be watered with coloured infusions. Hence, we conclude that by the application of unnatural machinery and agents, no correct natural results can ever be attained.

But by whatever aliment a deep and healthy tint of foliage is produced, there is reason to conclude that to a greater or less extent the flowers or fructiferous system will be improved; and as vegetable matter is proved in many instances to confer intensity of colour, it becomes the duty of the philosophic inquirer to investigate minutely and note down the effects of various composts. And hereupon we would observe that, as a general fact, masses of semi-decayed leaves are most favourable to culinary vegetables and melons; whereas for pot culture, the earth of leaves or vegetable mould, obtained by the operation of the weather, and occasional turning over during three years, is required.

As respects quality, the leaves of oak and beech, beaten off the trees in autumn, while yet green, produce the best heating material; but in ornamental gardening, the preference appears due to the mould obtained from the soft-leaved trees and shrubs, which ferment and decompose rapidly. Most persons would object to those of evergreens, especially the common laurel; though it has been observed that the leaves of the fir tribe yield an earth more closely resembling that of heath soil than those of any other trees.

American plants, as they are styled, prosper abundantly by being dressed every autumn with a layer of decayed leaves, which, after the winter, is lightly pointed into the soil. A noble example of this practice was given in the great Azalea bed at Claremont Gardens; this we witnessed in 1836, and beautiful were the effects.

Chemically considered, there is a greater volume of convertible elements in fine leaf-mould than exists in any heath soil. It never binds, and yet retains a sufficiency of water. Iron is always present, sometimes alumine to a small extent; and, in the earth of beech leaves, some chalk, which might be objectionable with the heaths and hair-rooted shrubs. Upon every consideration, it appears more than probable that if change of tint, to a greater or less extent, is to be produced in flowers, it will be effected by the discriminating application of the earth of tree-leaves, reduced more or less by decay in masses, and modified under the guidance of experience, by one or more of the staple earths. With siliceous white sand alone, it might, we believe, be rendered a complete substitute for any kind of bog or heath mould.

ECONOMY IN FLORICULTURE.

Economy is the very soul of good gardening; and comparatively little merit attaches to any productions that have not been economically cultivated. In small gardens, the manager is generally compelled to practise it; and in those of larger dimensions, it ought to be rigidly adhered to, because useless extravagance, though nowhere tolerable, is least so where it represses industry and ingenuity.

In two systems of treatment, then, of any kind, that are calculated to attain the same object, that which does it at the least expense, if it do it as effectually as the other, is unquestionably to be chosen. This will hold good as a maxim of some importance, though apparently trite; for, however unanimous cultivators might be in admitting its correctness theoretically, many of them shrink with apprehension from the mere mention of cheap plans, on account of the very inaccurate notions that are current regarding what economy really is.

Some persons, unaccustomed to reflection on any subject, consider that must be the cheapest method which accomplishes an object with the least outlay in the first instance. And it is this perverted use of the word "cheap," which makes the more calculating grower cautious when he hears it employed. Others, again, deem that system the most economical in which the least cash is expended, without reckoning the cost of increased labour. And a third party account that plan the most saving in which the least money and labour are required, if it fulfil the desired end only indifferently.

All these classes err seriously in their estimate of economy, which term applies solely to a course of treatment that, throughout its entire progress, shall cost the least money and trouble, and, at the same time, bring about the highest wishes of the culturist in the best possible manner.

To form a true notion, therefore, of whether any given mode of procedure is to be recommended for its cheapness, we must ascertain its actual entailment of expenditure, in time and cash, from beginning to end, and also if the results it professes to realize are the very last at which the employer of it should aim.

To illustrate what we have been saying, if the relative economy of two systems of heating were to be determined, it would not be sufficient to look at the first cost of their erection, and the amount of fuel they would consume, but the repairs they would subsequently need, the quantity of attention they would demand, and, more particularly, their capacity for doing the utmost that could be required of them adequately and satisfactorily, should be taken into account. Moreover, to put another case, if the cultivation of a plant, by two different methods, had to be investigated, in order to learn which was the most economical, beyond the calculation of the actual money expense of each, it would be essential to know which was performed quickest, and thus saved most time; which easiest, and consequently spared most labour; and which brought the plant into the finest and most ornamental state. The last of these points, though very likely to be neglected altogether in such a calculation, is, we venture to say, incomparably the most important.

We have sought thus to place the question of real economy in a clear light, that we may not be misunderstood in any observations which shall follow, and likewise that correct notions on the matter may become more prevalent. It is our desire here to take up a few subjects on which time or money are absolutely and frequently wasted, and to show how both of these may be economized. The instances we shall select will be taken mainly for the commonness of their occurrence, and hence nothing like a systematic arrangement of them will be attempted. They will simply be brought forward, whether now or at a future period, quite at random, as they happen to present themselves.

Fastening at once on one of the most prominent things which cause superfluous expense in the culture of flowers, we would speak of that tendency, which is almost universal, in growing such numbers of plants in houses that might be much better managed in frames or pits. There is scarcely a dwarf plant of all the tribes generally seen in greenhouses, and even in stoves, that would not flourish better in a frame or pit, from whence it might be removed to the house or drawing-room while blooming. That the expense of erecting houses, heating them, and keeping them in order, is very much greater than that of frames or pits, will be immediately obvious; and when, likewise, the plants themselves are benefited by such a practice, the economy of the thing is rendered doubly conspicuous.

If it be objected to the use of pits and frames that they cannot be conveniently examined by persons interested in the plants, such an objection might be removed by keeping them in a part of the garden which is maintained in as neat, trim, and ornamental a state as any of the other portions; for it is not at all necessary that a frame ground have a slovenly, untidy, or displeasing appearance. But when it is further urged that frames can only be visited in favourable weather, we would reply that all the curious or flowering plants should be kept in the house, and only those out of bloom, whose aspect has little of interest at that time, retained in the frames.

Modern opinions concerning the management of plant-houses are very different from those which were formerly current; and as they do not arise from fashion, but true taste, they are doubtless more correct. These are that the houses about a place should be few,—especially the greenhouses,—and that these should be supplied from frames with plants in blossom, or those which are otherwise attractive. The plan is merely a carrying out of that adopted with flower-gardens, which is now so common that no one thinks of questioning its propriety. And assuredly, if it is desirable that a plot of ground in the open air be continually decorated with flowering objects, it is much more so to maintain a similar display in a house erected entirely for ornamental purposes.

But the economy of using frames instead of houses to cultivate and prepare the plants required for the latter, would not be confined to their actual cost in building. This, although a large, would not be the only saving by such a plan. Since no paths would be requisite in pits or frames, the whole of the space covered by the glass might be appropriated to the plants. Nor is even this all. The frames could be heated, or cooled, or kept moist, with greater facility, and thus the plants in them would be more thoroughly beneath the control of the cultivator. They might likewise be far more cheaply supplied with artificial heat, when necessary, or shaded during summer, or covered to any extent in winter, to obviate the employment of fire-heat. The plants, too, could be more readily plunged in them, during summer, when bottom-heat is needed, or when their roots want protection from the fervour of the sun's rays.

All the three features of economy which we set out with specifying, are, therefore, compassed by the method under notice. It costs less money in the first instance, and less to keep it in order; it occasions a less expenditure of time and labour, because any kind of treatment is easier given in frames than in houses; and it greatly benefits the plants. Each of these conditions is, further, attained in an eminent degree.

The system is particularly adapted for Heaths, Pelargoniums, flowering Cacti, those globular-headed Cacti that demand additional heat in summer, Calceolarias, dwarf greenhouse shrubs and herbaceous plants of every description, Gesneras, Gloxinias, Achimenes, bulbous plants, Mesembryanthemums, and most of the dwarfer inhabitants of the stove, especially those which delight in bottom-heat.

To such an extent has the custom of growing plants in houses been pursued, that it is far from being an unusual thing to see propagation conducted in a house, and all sorts of forcing performed in the same kind of structure. Now, where propagation is done in the spring or summer, as it ought to be, there can be no manner of necessity for doing it in a house; and a frame or pit would be altogether more suitable as well as inexpensive. The atmosphere of a pit or frame can be much better regulated, as regards moisture, than that of a house; and this is a most important matter in propagation. Bottom-heat, too, can be more conveniently and cheaply given or maintained; and it is much easier to shade a frame than a house.

In respect to forcing, frames might not, perhaps, be quite so convenient as houses in the depth of winter; but a low pit, partly sunk into the ground, with a path in it just broad enough and far enough from the glass to admit the attendant, would be far preferable to a house in every point of view as regards culture, besides not costing nearly so much to put up or to heat. Farther on in the spring, frames supplied with a dung-heat from beneath or by linings,—though a pit such as we have spoken of might be heated in the same manner,—would be more appropriate and economical.

In following out our economical principles, however, we would go considerably beyond what has hitherto been suggested, and cultivate a large portion of what are termed greenhouse plants in the open border during summer, keeping them, or a quantity of young stock raised from them, wholly in frames through the winter. We are conscious that this system is a good deal practised in modern flower-gardening; but we are alluding to the extension of this plan, and to the adoption of something of another character.

When a plant is capable of blooming well in the open borders, it loses much of its attractions for the greenhouse, which should then be filled with something of a more tender description, unless the former is much superior if kept in it. But when the opposite of this last occurs, and a species flourishes and blossoms best out of doors, it should invariably be grown there, and not introduced to the house—provided its place there can be otherwise supplied. How many greenhouse or half-greenhouse plants there are, besides those already used in flower-gardens, which would realize this supposition, and succeed better in an uncovered border through the summer, needs not be stated. A considerable portion of them, however, do not grow rapidly enough, or arrive at maturity sufficiently soon to admit of their being planted out and abandoned every year; and these we would grow constantly in pots, plunging the latter over the rim every summer in the open border. The disadvantages of exposing greenhouse plants in summer would not be experienced here, since the sun could not act so injuriously on their roots, and they would be nearly as well off as if they were quite freed from the pots. To prevent them from being injured by the suddenness of their removal to the open air each spring, they might be gradually hardened in the frames by leaving these open in the day some time before plunging them out. They could be taken up again in the autumn, and put back in the frames.

By some such a procedure as this, there are few of the summer-flowering greenhouse plants, except such as are very fragile and delicate, or have peculiarly tender flowers, that might not be grown to a high perfection without any house whatever. The plan would be very available for those who could not have a greenhouse, and possess only a few frames destitute of heating apparatus. The plants, if carefully tended, would want no artificial warmth in winter, and frost might be excluded by ample external coverings. Where, again, only one house was possessed, this might be turned into a cool stove, thereby admitting a higher class of plants, which, with a little ingenuity, could be cultivated for the same expense as greenhouse species, seeing that a judicious summer and autumn management would leave nothing necessary for the winter but the exclusion of frost.

Nor need those who have no lack of erections, be fearful lest such a practice should rob their greenhouses too much. It would merely take away the more hardy of the plants, and thereby admit of the remainder being treated in a more congenial manner. It is the hardier sorts that render it needful to make greenhouses generally so dry and airy during the growing period, and if these were taken out, the rest might have both a moister and a closer atmosphere, to their great advantage. The choicer Pelargoniums, the Cacti, the herbaceous Calceolarias, the Camellias, the Epacrises, the Azaleas, and the more delicate of the Heaths, are some of the kinds that would not do for treating as we have proposed, and they would therefore remain for the adornment of the greenhouse.

It may be observed that the plants thus made use of for plunging in the borders should not be grown in pots of too limited a size; because, on being plunged, the roots would soon get through the bottom of a small pot, and the specimen would then be damaged at the time it was taken up. They should all be put into such pots in the spring as the season's growth demands; for, when plunged, there will not be much danger of the soil becoming sour, as watering will not be nearly so often requisite.

Let it not be thought that the plan here sketched would be less productive of pleasure than the culture of the same plants in a greenhouse. If pursued with propriety, selecting suitable sorts for its application, the plants will even be healthier and finer; and they who ridicule what we have advanced, should certainly hesitate ere they discard a process which brings at least an equal amount of enjoyment at a diminished expense. We shall continue these economical hints as we may find opportunity.

ON THE PROPAGATION OF A FEW CLIMBING PLANTS.

It is a fact with which almost every experienced grower of ornamental shrubs must be familiar, that the early productiveness of the plants he rears will be in great part dependent on the manner in which they are raised. A specimen shrub, raised from seed, is always much longer in coming into a flowering state than one derived from a sucker. This, again, would be far slower in blooming than one which layering had produced. And a plant raised by layering will generally be more tardy in developing blossoms than one reared from a cutting, where the latter method can be employed.

But there is another circumstance attending the propagation of plants by cuttings which is very insufficiently known, or at least seldom duly considered; and this is, that a specimen reared from a cutting will be a longer or shorter period in bearing its flowers, according to the condition of the parent plant. Thus, if a shrub is in a peculiarly unhealthy, and consequently infertile state, or particularly luxuriant, and hence unable to bloom, the cuttings taken from it will grow into plants which will require a protracted course of treatment to render them prolific. On the other hand, if the parent specimen be in a remarkably free-flowering condition, the young plants produced from its cuttings will, when properly managed, bloom both soon and abundantly.

These are things, the right attention to which is of the first moment in the management of a collection. With reference to climbing plants, however, a further hint discloses itself to the initiated regarding the selection of cuttings for multiplication. It is that, to ensure speedy fertility, the cuttings should not only be prepared from those specimens which are disposed to bloom profusely, but that they be taken from the lateral shoots that are growing towards the upper extremity of the leading stems, and never from those principal shoots which issue at or near the base of the plant. The temptation to choose these last is sometimes strong, because they mostly appear more vigorous, and, by removing them, the plant would seem to be less robbed of its flowering branches. Still, as the principal stems or branches of a climbing plant never bloom till they reach a certain length, they should not be used for cuttings where early productiveness is desired.

By taking advantage of such circumstances as these, the strongest climbers may be had in flower in a dwarf condition; so as to take the appearance of shrubs, and also to become fit for training on low trellises in pots. The plan is likewise of much use in keeping up a succession of beautiful flowering plants, and bringing them into bloom considerably sooner than they would otherwise flower. There is nothing more annoying to cultivators generally than to have a number of plants about their place which will not blossom; and climbing species, as commonly raised, are especial causes of such annoyance.

To facilitate the procuring of quick-flowering specimens from climbers by cuttings, a plan has been pursued in a nursery near London, which we have had opportunities of frequently visiting. It has hitherto been confined to stove plants, and has, besides the above recommendation, the merit of saving both room and trouble. The ends of the young lateral shoots are chosen for operating upon, and at a joint only a short distance from the extremity, a quantity of damp moss is tied round the shoot, previously removing the leaves, and sometimes making an incision through the joint, or partially severing the shoot in the middle of the joint. In a moist atmosphere, roots are soon thrown forth into the moss, and the young plant is then cut off, carefully potted, and shaded a little for a time. It rapidly becomes established, and flowers the same season.

The practice has been adopted with *Ipomœa Learii* and *Allamanda cathartica.* It would equally suit *Stephanotis floribundus*, and many other species, both stove and greeenhouse, where the air was kept sufficiently moist, and the moss constantly damp.

FLORICULTURAL NOTICES.

NEW OR BEAUTIFUL PLANTS FIGURED IN THE LEADING BOTANICAL PERIODICALS FOR AUGUST.

Aca'cia denti'fera. "A new and very graceful species of *Acacia*, from the Swan River, with unusually long racemes of flowers, longer than the leaves, of a full yellow colour, and highly fragrant. These racemes, however, Mr. Bentham observes, run out into leafy branches, and thus the species would appear to belong to the division with solitary capitula. The seeds were received from Mr. Drummond; the flowering season of the plant, in an airy greenhouse, is March and April, after which it produces its pods tolerably copiously." The plant grows, apparently, five or seven feet in height, with simple, linear-lanceolate, falcate, long, and mucronate phyllodia or leaves. *Bot. Mag.* 4032.

Clo'wesia ro'sea. This elegant plant is "a native of Brazil, and first flowered at Broughton Hall, near Manchester, with the Rev. Mr. Clowes, after whom it is named. At a later period (March last) it was received from Sion Gardens, by the permission of His Grace the Duke of Northumberland, and from that plant the figure was taken. It is very like a *Catasetum* in habit. The stems are from 2¼ to 4 inches long, ovate, clothed with the remains of the bases of leaves. The leaves are said to be three, lanceolate, ovate, acuminate, and at the point twisting a little on one side. The inflorescence proceeds from the base of the stems, and consists of five or six, probably more, erect, delicate, white flowers, tinged with pink. They are remarkable for having their petals and the end of the lip broken up at the margin into numerous delicate, glandular fringes, which give them a very rich and beautiful appearance. As a genus, *Clowesia* is perfectly distinct from everything previously described. Its flowers being extended a little into a chin in front, suggest its belonging to the Maxillaridous division; but its whole habit and the singular apparatus of its pollen-masses oppose such an arrangement. The latter organs rest on a broad viscid gland, like that of a *Catasetum,* but the caudicula, or part that connects the gland and pollen-masses, is broad, thin, and contracted in the middle, so as to resemble an hour-glass; but whether that is the usual structure" is doubtful. *Bot. Reg.* 39.

Cy'tisus Welde'ni. That this species is very different from the common Laburnum will be readily seen by any one who has an opportunity of examining the plant. It was figured, in the preceding spring, from the garden of the Earl of Ilchester, in Dorsetshire. "It is obviously distinguished by its flowers growing in short erect racemes, and not in long drooping ones. Although, from its similarity in foliage to the Laburnum, it is liable to be confounded with that plant, yet it is in fact nearer *C. sessilifolius,* of which it may almost be regarded as a gigantic form. To what size it will grow is unknown; probably eight or ten feet high; but on its Dalmatian mountains it is said to be a bush. The poisonous quality of the common Laburnum is still more concentrated in this species, as we are told by the German botanists. The General Baron Welden, after whom it is named, assures us that its very flowers produce headache, and that the goats which feed upon it produce poisonous milk." *Bot. Reg.* 40.

Drya'ndra arcto'tidis. "This is one of several handsome species, which Mr. Baxter added to the number previously published in the Prodromus Horæ Novæ Hollandiæ; and which Mr. Brown introduced into his valued Supplement, which appeared in 1830. It was detected in 1829, in the hilly region near King George's Sound, on the south-western shores of New Holland.

Plants were raised from seeds soon after that period, and they form small, but handsome, bushy greenhouse plants ; bearing numerous flowers in the month of May in the Royal Botanic Gardens of Kew." The leaves are very long, slender, and deeply pinnatifid ; the flowers being terminal, and almost buried among the foliage. The plant is dwarf, but much branched and straggling ; while the leaves are numerous and dense. *Bot. Mag.* 4035.

ERA'NTHEMUM MONTA'NUM. Justly called by Dr. Roxburgh a very beautiful flowering shrub, and " a native of the Circar mountains. It is also found by Dr. Wight, probably not unfrequently, in the Madras Peninsula ; and I possess numerous specimens," says Sir W. J. Hooker, " from Colonel and Mrs. Walker, gathered in Ceylon. It is allied to *E. strictum,* but abundantly distinct in the very different bracteas, larger size, in the colour of the flower, and the much longer tube. Nees described four varieties, chiefly differing in the nature of the bracteas, and in the hairiness about them and the calyx : the stem also seems to vary. It flowers copiously in the stove in April and May." The stems are weak, with four-sided branches, ovate-lanceolate and acuminate leaves, and lilac or rosy purple flowers, which have a very long, curved tube, and appear in loose panicles. *Bot. Mag.* 4031.

LIPA'RIA PA'RVA ; *var.* ANGUSTIFO'LIA. " A small, erect, but rather straggling shrub, long cultivated in the greenhouse of the Royal Gardens of Kew, and considered a new species of *Liparia.* It has, however, since the publication of the Leguminosæ in Decandolle's 'Prodromus,' been published in the ' Linnæa,' and, still more recently, in Walpus' useful ' Repertorium Botanices Systematicæ," under the name here adopted. It flowers in the early spring months, and makes a pretty appearance with its rather large, orange-yellow heads of flowers." The stem is somewhat weak and flexuose, or straggling, and the leaves are oblong-lanceolate rigid, and acute. Both the leaves and flowers turn black in drying. *Bot. Mag.* 4034.

NARCISSI, *hybrid.* Several curious hybrids are figured, which were raised by the Hon. and very Rev. the Dean of Manchester, "from seed at Spofforth, and are amongst those which have already flowered." It is stated by Mr. Herbert that many Narcissi, which have been distinguished as species, and even made into fresh genera, are never known to bear seed, and they are hence regarded as mules. Mr. H. has entirely verified this supposition in some of his hybrids ; producing what have been regarded as separate species or genera from two other decided species. "Fig. 5," he says, "is the produce of the wild Yorkshire daffodil, *Ajax pseudo-narcissus,* by pollen of *N. poeticus,* and is decidedly a variety of the plant called *N. incomparabilis.* Fig. 3 is the produce of *N. incomparabilis,* by the same *N. poeticus,* that is, two generations from the daffodil by the poetic narcissus ; and in it the change is complete, from the form of stamina in the daffodil to that in the true narcissus, and it is evident that one cross more (or at least two further crosses) would, out of the wild daffodil, produce the true Pheasant-eye Narcissus." Other, and very curious instances, of a like character, are adduced, and Mr. Herbert observes that, " it is desirable to call the attention of the humblest cultivators, of every labourer indeed, or operative, who has a spot of garden, or a ledge in his window, to the infinite variety of Narcissi that may be thus raised, and most easily in pots at his window, if not too much exposed to sun and wind, offering him a source of harmless and interesting amusement, and perhaps a little profit and celebrity. The six anthers should be carefully taken out before the flower, which is to bear the seed, blooms. This may be done through a slit cut in the tube ; and the yellow dust from another sort must be applied to the point of the style. The two-flowered *N. biflorus,* which has no ovules, may be an accidental mule, barren from extreme old age, (perhaps many centuries,) as well as from hybridity. It will be remembered, that many years ago the writer asserted that *Crinum amabile* was a sterile mule. He can now state that, although it has long been introduced into Jamaica, and flourishes there exceedingly, it is as sterile there as in the east, and has never been known to produce a seed." *Bot. Reg.* 38.

ONCI'DIUM UNIFLO'RUM. "This curious little plant, allied to the rare *Oncidium barbatum,* inhabits trees in the forests of the Organ Mountains of Brazil, where it was found in April 1841, by Mr. Gardner. For its introduction to gardens we are indebted to Sir Charles Lemon, who received it from Brazil in August 1841, through Lieutenant Turner of H. M. Packet ' Ranger,' and in whose collection at Carclew it flowered in November 1842." The pseudo-bulbs are roundish oblong when young, and afterwards become thinner and furrowed. The leaves are oblong, lanceolate, acute, and a good deal recurved. The flowers are solitary, issue from the base of the leaf, and are comparatively large and handsome. Their sepals and petals are dingy brown and slightly spotted, while the lip has three lobes, of a bright yellow, only a little blotched and spotted with blood-red around the crest. "The plant appears to grow in large masses on the branches of trees, to which it is attached by its numerous, round, filiform, ash-coloured roots. It is grown at Carclew, in a warm, moist stove, suspended from one of the rafters." *Bot. Reg.* 43.

Renanthe'ra matuti'na. "Although this plant bears no comparison with the magnificent Chinese species on which the genus was founded, yet it is very far from being unworthy of cultivation. Indeed, by the number of its flowers and the richness, though not brilliancy, of their spots, it makes up in some measure for their want of size. The first mention that is made of it is in Blume's *Bijdragen*, where it is referred with doubt to the genus *Aerides*, and said to be found in flower in the month of September, on trees at the foot of Mount Salak, in Java. Mr. Cuming afterwards gathered it at the Philippines, but by no means in so luxuriant a state as the specimen now represented, which flowered at Chatsworth in December last." It has also bloomed at Messrs. Rollisson's, Tooting. *Bot. Reg.* 41.

Rosa Brunonii. "A native of Nepal and Kamoon, whence it has been sent to the Royal Gardens of Kew, where, planted against a wall facing the west, it proves perfectly hardy, and, in the summer months, it makes a handsome appearance with its large corymbs of white or slightly-cream-coloured, fragrant flowers, which, in age, assume another tint, being then singularly spotted with dingy purple. Our plant seems less glandular and downy than the one figured and described by Dr. Lindley, and is probably the variety *depilata*, from Kamoon." It is a half-climbing shrub. *Bot. Mag.* 4030.

NEW OR INTERESTING PLANTS RECENTLY FLOWERED AT THE PRINCIPAL SUBURBAN NURSERIES.

Angræ'cum bilo'bum. This very elegant and curious little plant is now bearing racemes of flowers, eight or nine inches in length, with twelve or fourteen blossoms on each, at Messrs. Loddiges' nursery, Hackney. The leaves are peculiar for their form, being broad, and having an irregular two-lobed termination, while they are of a remarkably deep green hue, with very dark and distinct reticulated veins. The flowers are conspicuous for their snowy whiteness, which renders them very lovely.

Angræ'cum cauda'tum is not so singular as the last in some respects, but it is more so in having such peculiarly long tail-like appendages to its blossoms. These tails, which are twisted somewhat in the manner of a corkscrew, only not so closely, are often from six to nine inches long. The flowers are produced in bold racemes, and have a beautiful white lip. Being difficult to propagate, it is yet rare. A plant of it is blooming at Messrs. Loddiges'.

Anæctochi'lus seta'ceus. A delicate East Indian Orchidaceous plant, resembling the common *Goodyera*, and always pleasing, on account of its prettily-marked foliage. The leaves are of a very deep olive-green hue, with numerous orange-coloured veins. They have a remarkably rich and velvety appearance. The flowers are borne on erect spikes, and would, from being of a greenish colour, have little attractiveness, but for the beautiful white lip, which has many hair-like appendages to its sides, after the manner of a fringe. The plant is grown in the usual heath-mould, and is generally kept covered with a small bell-glass. It must be guarded from becoming too moist.

Babia'na ru'bro-cya'nea. This is quite an old species, but rare, and particularly ornamental. It grows only about three inches in height, with slightly hairy leaves, and bunches of blossoms whose colours are exceedingly handsome. They are of a very deep blue, with a rich crimson centre. It blooms in July, and we noticed it in several gardens, where every one seemed to admire it.

Brugman'sia ——— ? Mr. Low, of Clapton, has lately had sent to him from the country a flowering specimen of a kind of *Brugmansia*, which has the dwarf and close habit of *B. sanguinea*, with similarly formed and downy leaves, but flowers like those of *B. suaveolens*, and apparently quite as white. The blossoms were all shed in travelling. It may possibly be a hybrid, though it has none of the appearance of being so.

Clerode′ndron kœmpfe‵rii. This plant seems to be allied to *C. speciosissimum* and *C. squamatum*, but has smoother leaves, while the flowers seem to be of a darker and more brilliant scarlet tint, having stalks of the same colour. It is blossoming in a stove at Mr. Low's, Clapton; and, when in a high state of cultivation, will no doubt be very splendid. It is probably identical with a plant called *C. fulgens*, which has been bloomed by Mr. Green, gardener to Sir E. Antrobus, Bart., Cheam.

Dendro‵bium crumena‵tum. At Messrs. Loddiges' this attractive species is grown abundantly on logs of wood, and as the stems, with their flower-spikes, spread about considerably, it produces a graceful and delightful effect. It is now bearing great numbers of white flowers, which are arranged rather distantly on long rigid stalks, issuing from the sides of the stems, and having from six to twelve blossoms on each. The flowers are most deliciously odorous, with a scent something like that of violets.

Epiden′drum vitelli‵num. A plant of this species, now in blossom with Messrs. Loddiges', exhibits it as the handsomest of all Epidendra, having short upright racemes of the brightest vermilion-coloured flowers, which are large and very showy, having a particularly small pale orange lip. They are closely arranged on the raceme, and six or eight are borne on each. The pseudo-bulbs are small, slender, and somewhat tapering, and the leaves are slightly glaucous.

Gloxi′nia digitaliflo‵ra. This appears to be quite a distinct species, disposed to grow dwarfly, and having neat leaves, which are particularly thick and strong. The flowers have a longer tube than usual, and this is likewise less pouched on the under side. The limb is a fine crimsony purple, very like, in colour, to the blossoms of *Achimenes grandiflora*, but a little more deeply shaded with purple. It is in flower at Mr. Knight's, Chelsea, and Messrs. Rollisson's, Tooting.

Gloxi′nia ru‵bra, *var.* A hybrid, of which *G. rubra* is one of the parents, and which exhibits some of the colour of that species in its flowers, though sufficiently different from it to constitute a well-marked variety, has at last been obtained; and we have seen it at Mr. Mountjoy's, Ealing, and Mr. Low's, Clapton. It has beautiful deep rosy-pink flowers, which are whitish in the bottom of the throat, and dark pink near the top. The shading of colour is somewhat varied; and it is altogether an interesting plant.

Gloxi′nia specio‵sa, *var.* A variety of the old *G. speciosa*, with spacious leaves, and very bright blue flowers, which have scarcely any of the common purple shade in them, was introduced some short time back by Messrs. Veitch, of Exeter, and is at present in blossom at Mr. Low's, Clapton. It is clearly distinguishable from the species, and is a highly ornamental and useful plant for stoves.

Gompholo′bium sple′ndens. Not very unlike *G. tenue* in its flowers, which are bold and of a deep yellow colour, but entirely different in habit, besides having broader leaves. It seems to be a decided shrub, of a low character, and not at all climbing. If pruned, and rendered bushy by culture, it would doubtless be a very handsome object. It is flowering in a greenhouse at Mr. Low's, Clapton.

Hu′ntleya melea‵gris. Once almost lost to the country, shortly after being introduced, by being divided for propagational purposes. It is now, however, growing in great vigour in Messrs. Loddiges' collection, where there is also a blooming plant. It has solitary blossoms, about an inch and a half in diameter, and of a whitish or cream-coloured ground, copiously mottled with brown of various shades. Only two or three blossoms appear at once, though they last a considerable time.

Lemo‵nia specta′bilis. This neat evergreen shrub is blossoming in one of Messrs. Loddiges' stoves, where it blooms during a great part of the season. Few flowers are, however, opened at a time. The blossoms are deep crimson, and showy; while the leaves are abundant, and have a glossy surface.

Lisia′nthus Russellia‵nus. Two specimens of this plant, now at Mr. Low's, Clapton, and received from a country gardener, are in admirable health, and splendidly covered with bloom. They show plainly that, when well grown, the species is a really magnificent thing. The flowers are very abundant, large, and of the richest purple. They appear to be grown in very turfy loam, which is light, and full of fibre; for, on pressing it gently with the fingers, the soil immediately yields. It is probable that, where the soil is very turfy, and well mixed with broken stone for drainage, this plant might be well managed, according to the new system of potting recently described in this Magazine. Unquestionably, a want of openness in the soil is one cause of its frequent destruction, and particular care should, therefore, be taken to use coarse and unadhesive soil for it.

LOBE'LIA LONGIFLO'RA. A strange shining and prickly-leaved *Lobelia*, long known in cultivation, though lately become scarcer. It is a good stove herbaceous perennial, growing rather more than a foot in height, and producing numbers of long white flowers, which, from their length, and their purity, are very interesting. It blooms all the summer. Several plants are flowering freely at the Clapton nursery, seeds having been imported by Mr. Low about a year since.

LUXEMBU'RGIA CILIO'SA. We understand that this fine plant was collected by Mr. Gardner in Brazil. It has this year flowered vigorously with Messrs. Lucombe, Pince & Co., Mr. Knight of Chelsea, and others, blooming in June and July. It is an upright growing shrub, looking not unlike an *Arbutus* before it flowers, and having long neat leaves, which are much ciliated along the margins. The blossoms are borne in a large terminal spike, of a conical shape, and remind one of some of the old Cassias, except that their colour is a paler and more delicate yellow, and the flower-spike is longer. The whole plant has a peculiarly symmetrical and ornamental aspect.

LY'CHNIS MUTA'BILIS. Approximating to the common *L. coronaria* in general appearance and habit, though seemingly very distinct. Its great peculiarity is, however, the production of flowers which are deep pinkish or salmon-coloured at first, and afterwards change to a dull pale hue, approaching to white. As these different tints exist at the same time on one head of flowers, they look very curious. The plant bears fine heads of rather large blossoms, which are now expanded in a border at Messrs. Rollisson's, Tooting.

MA'LVA CREEA'NA A'LBA. This is simply a white-flowered variety of *M. Creeana*, very pretty, and well-fitted to mix with the species for planting out in beds. It is growing and blooming in the open border of the Clapton nursery. When placed in a tolerably rich soil, that is not too dry, but well exposed to the sun, both the species and this variety are of great beauty as summer plants.

MAXILLA'RIA HARRISO'NII A'LBA. About three months ago, we observed in Messrs. Loddiges' Orchidaceous house, a variety of the fine *M. Harrisonii*, with flowers that have a purely white ground, only a little tinted with pink towards the points of the petals. The species having rather dingy cream-coloured flowers, this variation is very pleasing.

MAXILLA'RIA XANTHI'NA. An exceedingly neat and attractive little species, after the style of *M. stapeliodes*, with similar leaves, and flowers which are borne in the same manner. It has bright yellow blossoms, which produce a lively effect, and the lip is spotted with reddish purple. It may be very appropriately grown in the half of a cocoa-nut shell or husk, or in a small basket made of shells, as it is only fit for suspending. The heath-mould used for it should be very fibrous, and well-drained.

MILTO'NIA SPECTA'BILIS. This noble plant is flourishing very well on a suspended log of wood at Messrs. Loddiges', where also it is beautifully in bloom. Such a mode of treatment gives it a most characteristic appearance ; and, if it is properly shaded, is perhaps better than growing it in pots, because it is thus less liable to be injured by water. A little moss should be placed over its roots when fastened to a block in this way, and it should be freely watered and syringed in the summer.

PELARGO'NIUM, *Shepherd's Queen Victoria.* Although we very rarely speak of florists' flowers, we are induced to mention the variety here alluded to on account of its being so peculiarly fitted for ornamental purposes. It is a low growing plant, remarkably dense in its habit, and bearing quite a sheet of delicate crimson and white flowers. These are by no means what a florist would call good ; but they have, on the whole, such a lovely effect, that the variety will be most welcome to those who wish agreeably to decorate their greenhouses, conservatories, or drawing-room windows, through the months of May and June, or even July.

SCYPHA'NTHUS E'LEGANS. From a quantity of plants now blossoming at Mr. Low's, Clapton, we are able to determine that this species is, as it promised to be, a very handsome ornament to the greenhouse or the borders. It is bearing a great profusion of blossoms, some of which are of a very deep and rich yellow, while others are paler. With only a few bushy stakes placed for its support, it scrambles over them, and is far more elegant, besides producing its flowers in finer masses, than if it were more formally trained.

STANHO'PEA TIGRI'NA. Specimens of this superb Orchidaceous plant have bloomed admirably, this season, with Messrs. Rollisson, Tooting, and at other places. Messrs. Rollisson have also flowered a remarkable variety of it, with much larger flowers, the blotches of which are considerably paler. The method of treating this genus, adopted at the Tooting nursery, is to fasten three, four, or more stout blocks of wood together, or to a short central block, at the base, and let them spread out at the top, so as to form a sort of invertedly conical or pyramidal-shaped cup. Some large lumps of rough heath-mould are put in the cavity, and the plants are placed on the top of this, the whole being, of course, suspended. By such means, no obstruction is offered to the pendent flower-scapes, which can readily pass downwards between the blocks, and a most thorough drainage is likewise obtained.

STANHO'PEA MARTIANA, *var.* Messrs. Rollisson have flowered, besides, what appeared to be a new species of *Stanhopea,* but is now determined to be a variety of *S. Martiana ;* and is, perhaps, the most elegant and lovely yet known. It has flowers with a whiter ground than *S. oculata* or *S. Martiana,* and only the lower part of the sepals and petals is spotted, in a very different way. The odour of the blossoms is most powerful and delicious.

TILLA'NDSIA XIPHIOI'DES. Introduced many years back, yet hardly ever cultivated, this delightful little species highly merits a place in collections of stove plants or Orchidaceæ. We saw it, three or four months ago, in a cool Orchidaceous house at Messrs. Loddiges, and it was growing amidst a mass of small Dendrobiæ on the lid of an old basket, apparently without any soil, or only the merest fragment of heath mould. Its beautiful white flowers, which last several days, have a fragrance resembling essence of lemons, though not so strong. It would be a very nice object for planting among the pseudo-bulbs of the smaller Orchidaceæ, where it would thrive almost as well as an epiphyte as it would with a portion of soil to sustain its roots.

OPERATIONS FOR SEPTEMBER.

IN almost all country gardens of any extent, where the proprietor has a town residence, there is a larger demand for flowers during the late summer and autumnal months than at any other period, because the family mostly remains in town till July or August, while the remaining end of the year is the country season. Scarcely can you meet an extensive cultivator at this time, therefore, without his inquiring what are the best autumnal flowers, especially for greenhouses and conservatories. In the open borders, half-hardy herbaceous and sub-shrubby varieties come into bloom so well during this period, that hardy plants are not so much in request. But all desire good showy specimens for the houses ; and, where the more ephemeral kinds, as annuals, (including Cockscombs, Balsams, &c.,) are considered too common, this is more particularly the case.

Now, there are two classes of plants which will be found useful for autumnal flowering ; and these are, first, those which bloom naturally towards this part of the year ; and, secondly, such as may be made to do so, either the second time, or by retarding the development of their blossoms, through any unusual course of treatment. With respect to the latter division, it is well known that the period of flowering may, in many plants, be materially altered by plucking off their blooms, by stunting them and keeping them dry at unnatural times, by attention to potting,—in either giving larger or smaller pots, according to the object,—by placing them in a cooler or warmer house than they commonly have at given seasons, by pruning or stopping the shoots, and by propagating some tribes at extraordinary parts of the year. Others, again, may often be induced to blossom twice in the season through a little artificial management, or, by the careful application of known laws, may prolong their period of flowering through the season when their blooms are most wanted. We do not intend here to describe any of the processes by which such results may be accomplished, nor to specify the plants which would most readily yield to such contrivances. We merely seek to awaken inquiry on the subject, and to urge all interested in the matter to note, this season, those plants which they find serviceable, whether flowering naturally, or made to do so by artificial means, throughout the autumn. The communication of their lists, with the account of any peculiar treatment given, to some respectable periodical, would tend, more than anything, to establish a general catalogue of the best sorts, and to diffuse a deeper pleasure among the patrons of floriculture, by having their plant-houses better decorated when they are alone able to enjoy them.

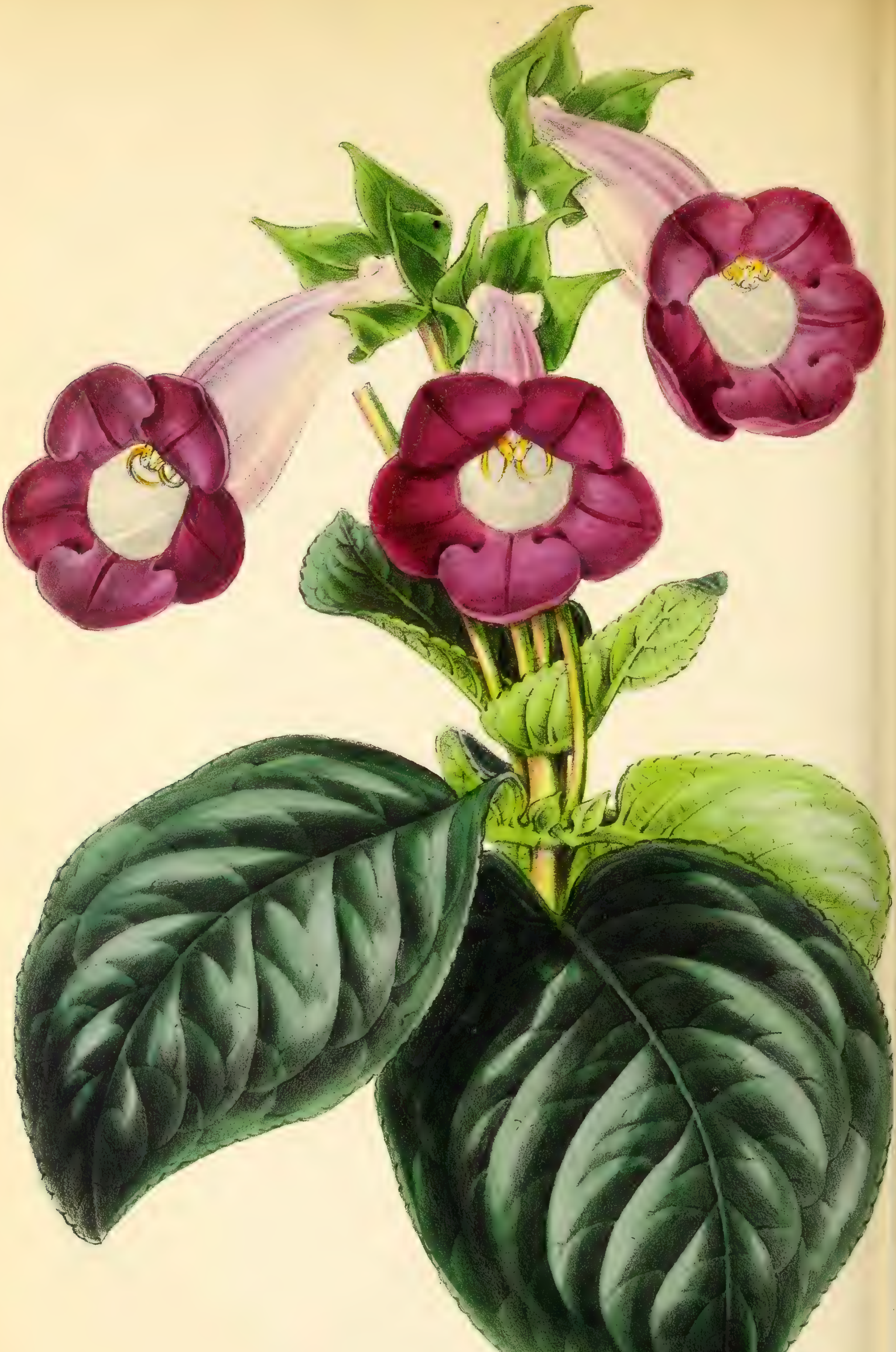
As this is the season for saving seeds, and there are few culturists who have not to complain of the failure of some portion of the seeds which they annually put in their gardens, we would enjoin a greater carefulness in preparing and collecting the seeds than is usually evinced ; satisfied that it is inattention to this circumstance alone which mars success. What we mean by preparing seeds, is comprised in the treatment of the plant producing them. More generally, a plant bearing seed is left to go on flowering, and the seeds developed by both the early and late blossoms are gathered at the same time, and used indiscriminately. It is thus that the failure of at least a portion of the seeds sown is rendered nearly certain. The proper way to manage the plants intended for seed, in order to ensure the due germination and growth of the latter, is to leave only a certain number of the earliest flowers on the plant for seeding, and scrupulously remove all the rest that may afterwards appear. In this manner, the seeds would be much finer, and they would nearly all ripen at the same time ; although, to prevent the loss of the first-ripened seeds, which are always the best, the individual capsules may be plucked as they reach maturity in most cases. Boys or women would readily do this ; and the increased trouble would be nothing compared with the excellency of the seed obtained. It is from a neglect of this plan that the seed of Mignonette is always so bad ; while that of most syngenesious plants commonly fails. A China Aster or a Rhodanthe, or any other related plant, will not ripen many heads of seed ; and it is consequently the wisest policy to suffer them only to retain a few.

Where the practice of exposing greenhouse plants is at all resorted to, the present is the season at which it may be followed with advantage. If put out immediately, most greenhouse shrubs will be benefited ; while their removal gives the opportunity for cleaning and painting the houses. There are three points in the general routine of placing out greenhouse plants which are exceedingly injudicious. The first is, that they are taken from the houses too early, before they have ceased growing ; whereas, they should never be set in the open air before the end of August or the beginning of the present month. The second is, that they are huddled together in groups, their branches often touching each other ; while the chief object of their exposure is to give them free light and air. And the third is, that the surface on which they stand is seldom firm enough ; or, if it be, it presses too flatly to the bottom of the pot, to permit water to run away readily. Now, they ought always to be placed sufficiently far apart to leave them entirely open and unencumbered ; and, besides having a surface of ashes, concrete, asphalte, stone, or something which worms cannot get through, beneath them, they should, if possible, be elevated on two pieces of brick, so as to leave the holes at the bottom of the pots quite free.

Directly the greenhouses are emptied, they should be most rigidly cleaned, the walls whitewashed, and, if necessary, the roof, &c. painted. This must not now be delayed a day ; for, when painting has to be done later in the season, it is a long time in drying, and injures the plants that are shut up in an atmosphere impregnated with it. The same process should be carried through the stoves, as soon as the greenhouses are fit to receive the plants from them ; and every plant structure should receive a thorough purification and repair. As the new leaves of stove plants are now firm, they may be carefully sponged over, to remove dirt or insects, before being taken from the house. The temperature of the greenhouse will be amply sufficient for the majority of them while the stove is being cleaned ; and those which happen to be growing, or in a very tender state, can be placed in a close frame or pit.

Those half-hardy plants that are required for the houses next year, and which are now out in the borders, may at once be propagated, that the young stock may be rendered comparatively strong and hardy before winter. But where plants of these kinds are only needed for the flower beds next season, it is better not to propagate them yet, but to put in the cuttings early next month, and keep them in the cutting pots all the winter.

Seeds of all the hardier annuals may be forthwith sown in the borders. They live admirably through the winter, and will enliven the garden at an early period in the spring. They may be sown thinly in patches, or in beds. Plants raised thus, at this time, make a very handsome display at a season when they are much needed.



S. Holden del & Lith

Gloxinia digitaliflora.

GLOXÍNIA DIGITALIFLÒRA.

(Fox-glove-flowered Gloxinia.)

Class.
DIDYNAMIA.

Order.
ANGIOSPERMIA.

Natural Order.
GESNERÀCEÆ.

GENERIC CHARACTER.—*Calyx* adnate to the ovarium, by the middle; limb five-parted, free. *Corolla* semi-superior, oblique, funnel-shaped or campanulately subringent, gibbose behind at the base; tube ventricose; limb spreading; upper lip two-lobed, lower one three-lobed. *Stamens* four, didynamous, with the rudiment of a fifth behind. *Glands* five, perigynous. *Capsule* one-celled, two-valved; placentas two, parietal, two-lobed. *Seeds* numerous, oblong.—*Don's Gard. & Bot.*

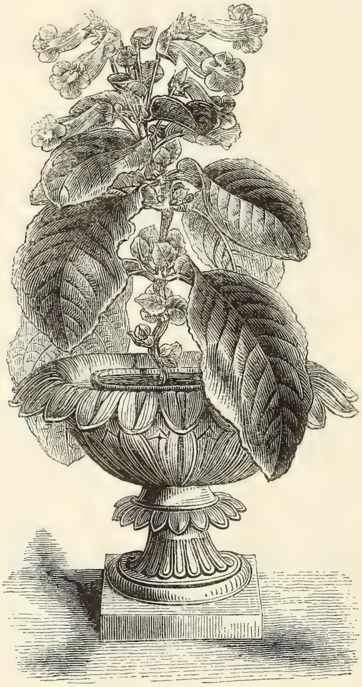
SPECIFIC CHARACTER.—*Plant* a tuberous-rooted perennial. *Stems* from six to nine inches high. *Leaves* broadly ovate, obtuse, thick and rigid, very slightly hairy. *Flowers* axillary, chiefly collected towards the summits of the stems. *Corolla* unusually long and contracted; limb with five nearly regular roundish segments, of a purplish crimson colour.

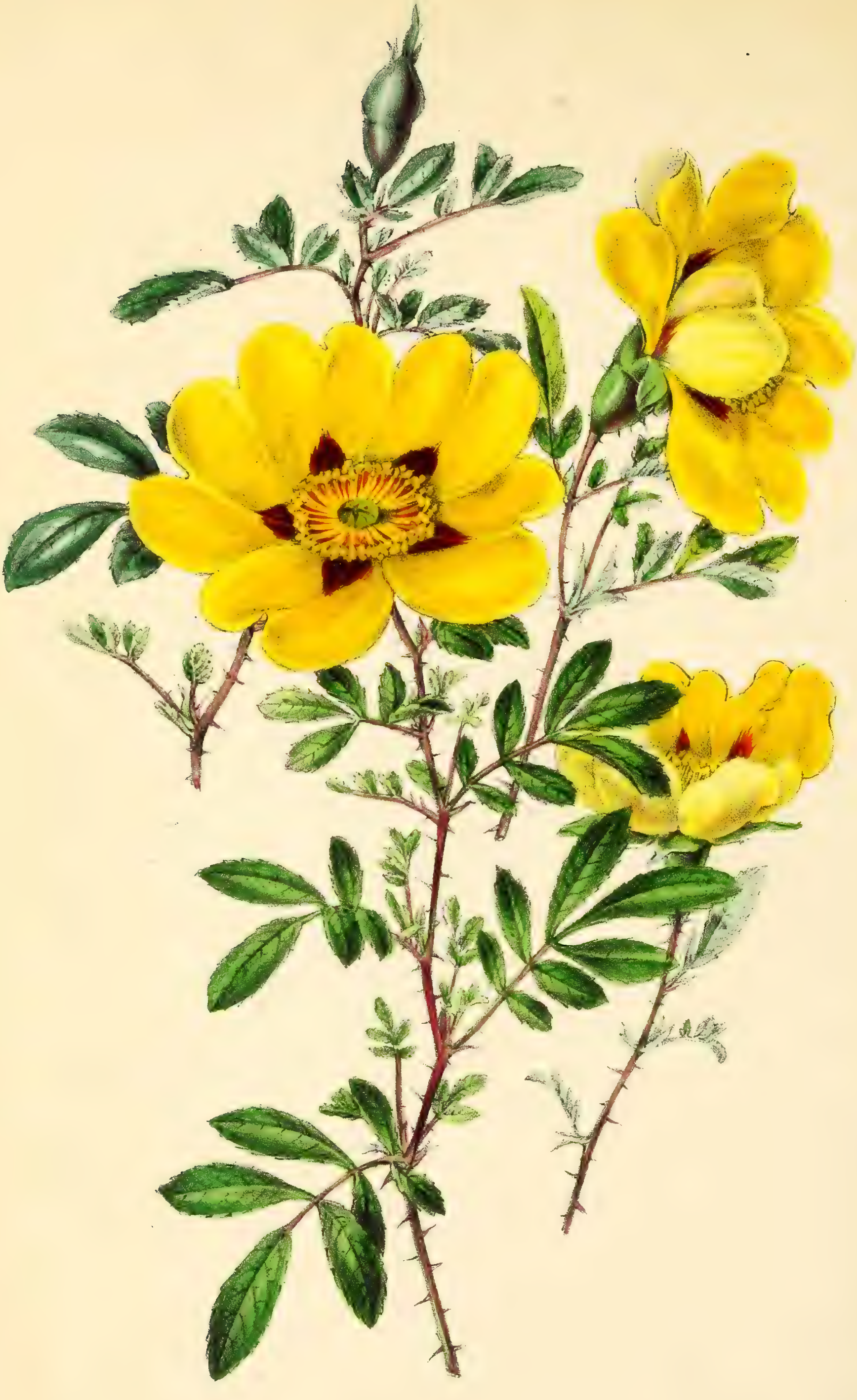
THIS beautiful and distinct species is of very recent introduction, and has flowered in several of the London nurseries. From a specimen which bloomed in the nursery of Mr. Knight, King's Road, Chelsea, our present drawing was prepared about four months ago. It is no doubt of Mexican or South American origin, though we have no information as to its exact native locality.

It belongs to the caulescent part of the genus, producing stems from six to nine inches in height, with the flowers so closely arranged as almost to cluster at the top of them. From other allied species it is easily known by its short, somewhat roundish, and very thick, leathery, yet firm and rigid foliage, which is borne in opposite pairs, with scarcely any stalk; and by its particularly long and small-tubed flowers. The latter, too, have an unusually regular limb, which is of a rich purplish crimson hue, resembling greatly the colour of the flowers of *Achimenes grandiflora.*

Like the rest of the genus, it appears to be a stove herbaceous perennial, requiring a peculiarly moist heat while it is growing, and remaining dormant in winter, when it should be kept very dry. One of the great points in the cultivation of this plant, and the whole of the tribe, is to give them a highly enriched and open soil, such as a good light loam, with a large proportion of decayed manure or leaf soil mixed with it; and, in addition to this, to furnish them at once, after they have fairly started into growth, with a pretty roomy pot. With these aids, and a moist bottom-heat, such as is obtained in a dung hot-bed, or in a pit filled with fermenting bark or leaves, they will flourish so luxuriantly as to have quite a different aspect from that which they would present if grown in the ordinary conditions.

For a fuller idea of the habit of the species, we must refer to the engraving below, wherein the plant is represented in one of the ornamental vases manufactured by Mr. Falcke, of Battersea.





S Holden del & Lith.

Rosa Hardii

RÒSA HÁRDII.

(Mr. Hardy's Rose.)

Class.
ICOSANDRIA.

Order.
POLYGYNIA.

Natural Order.
ROSÀCEÆ.

Generic Character.—*Calyx* with the tube contracted at the mouth, and with a five-parted limb; the segments somewhat spirally imbricated at the apex in æstivation, and usually pinnately divided. *Petals* five. *Stamens* numerous. *Carpels* numerous, bony, inserted on the inside of the tube of the calyx, which at length becomes baccate and encloses them; they are dry and indehiscent, bearing each a style on the inner side. *Styles* exserted from the constricted part of the calycine tube; sometimes distinct, sometimes connected into a columnar style. *Seeds* solitary, exalbuminous, inverted. *Embryo* straight, with flattish cotyledons.—*Don's Gard. and Bot.*

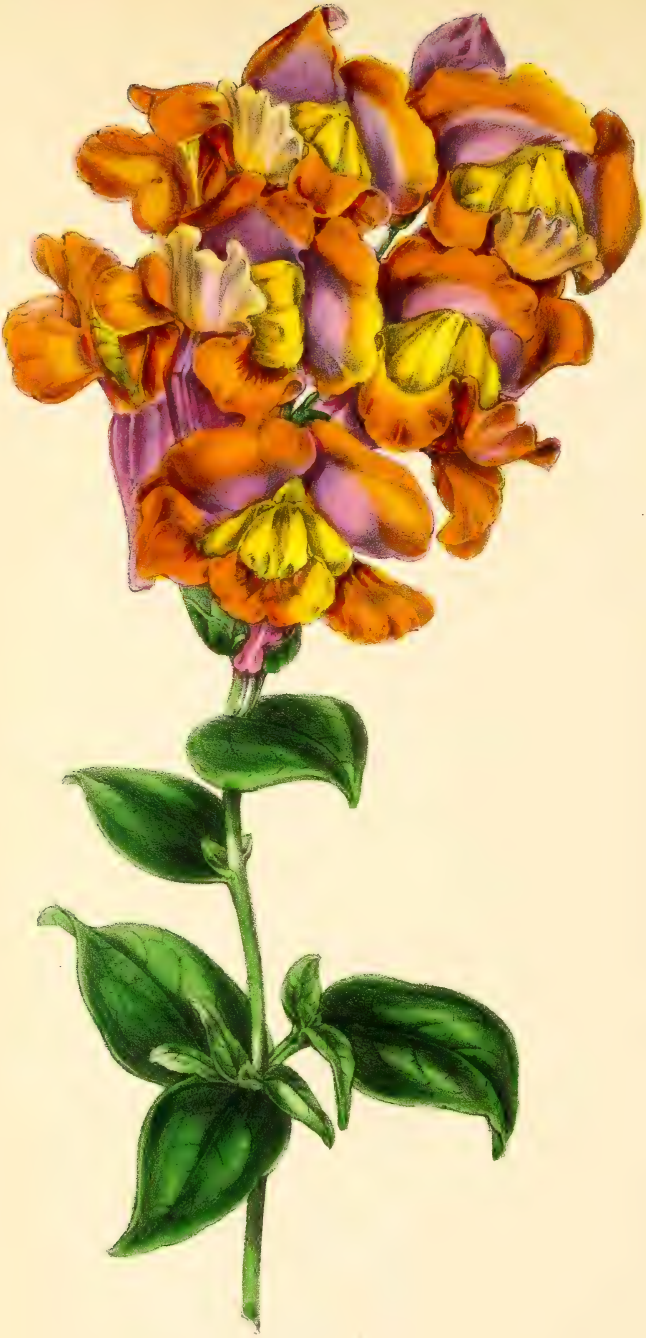
Specific Character.—*Plant* a hybrid, with a great deal of the habit of *R. berberifolia*, but much larger, deeper yellow, and handsomer flowers.

The showy and interesting *Rosa berberifolia*, which botanists have now formed into a new genus, under the name of *Lowea*, has been known for several years in this country, but has never yet become common, in consequence of the great apparent difficulty attending its cultivation. The present plant is a hybrid raised between that species and *R. involucrata* by Mr. Hardy, gardener at the Luxembourg Gardens, Paris, and it has been named after its originator.

We had it drawn, three or four years back, from the gardens of Mr. Halley, nurseryman, of Blackheath, who then flowered it in considerable perfection during the summer season. It is much superior to *R. berberifolia*, and is decidedly a very ornamental Rose, on account of its large and deep yellow or pale orange-coloured flowers, which have a rich brownish or dark sanguine blotch at the base of each petal. Its pleasing foliage is likewise a recommendation, being in itself pretty, and so different from that of other Roses.

It is one of those delicate-rooted things which require some care in their management; though the chief difficulties are overcome when the soil is rendered of a proper nature and texture, and the drainage is complete. It is said to thrive best in heath-mould; but there are serious mistakes current respecting the kind of heath-soil which is used for fine-rooted plants. That black, fibreless, close, and sandy bog-earth which is often employed, is the very worst of all soils for any plant that is tender. A very open, fibrous moor-soil, however, of a brown colour, and almost free from sand, is unquestionably suitable for such species as this; though a little light loam or leaf-mould should be mingled with it. With such a compost, well-drained, the plant will not fail either in a pot or the open border. It is extremely sensitive to wet, and especial caution should be exercised in preserving it from undue dampness.

Treated in this way, if the shoots are pegged down in winter, it will form a fine spreading bush, and may be increased either by layers or cuttings. The latter strike freely in spring, if managed like those of the China Roses. It is quite hardy on a well-drained border.



S. Holden, del & Lith

Antirrhinum majus quadricolor.

ANTIRRHÌNUM MÀJUS; *var.* QUADRÍCOLOR.

(Four-coloured-flowered larger Snapdragon.)

Class.
DIDYNAMIA.

Order.
ANGIOSPERMIA.

Natural Order.
SCROPHULARIÀCEÆ.

GENERIC CHARACTER. — *Calyx* five-parted, oblique. *Corolla* personate; tube ample, a little compressed; saccate at the base, and furnished with two parallel and interrupted lines of hairs inside beneath the palate; lobes of the upper lip erect, and often adpressed to the back by turns; lower lip spreading, having the middle lobes smaller than the lateral ones, with an ample bearded palate, which closes the throat. *Stamens* compressed, rather hairy at the base, having the sterile or fifth one very short or wanting. *Stigma* two-lobed. *Capsule* two-celled, woody, ovate or pear-formed, incurved at top, opening by three lobes, or an irregular foramen, under the top. *Seeds* oblong, truncate, minute, testa black, more or less wrinkled.

SPECIFIC CHARACTER.—*Stem* thick, twisted. *Branches* erect, usually branched again. *Leaves* oblong-lanceolate, attenuated at both ends, glabrous. *Flowers* racemose, approximate. *Calyx* with the lobes broadly ovate, obtuse, clothed with glandular hairs.—*Don's Gard. & Botany.*

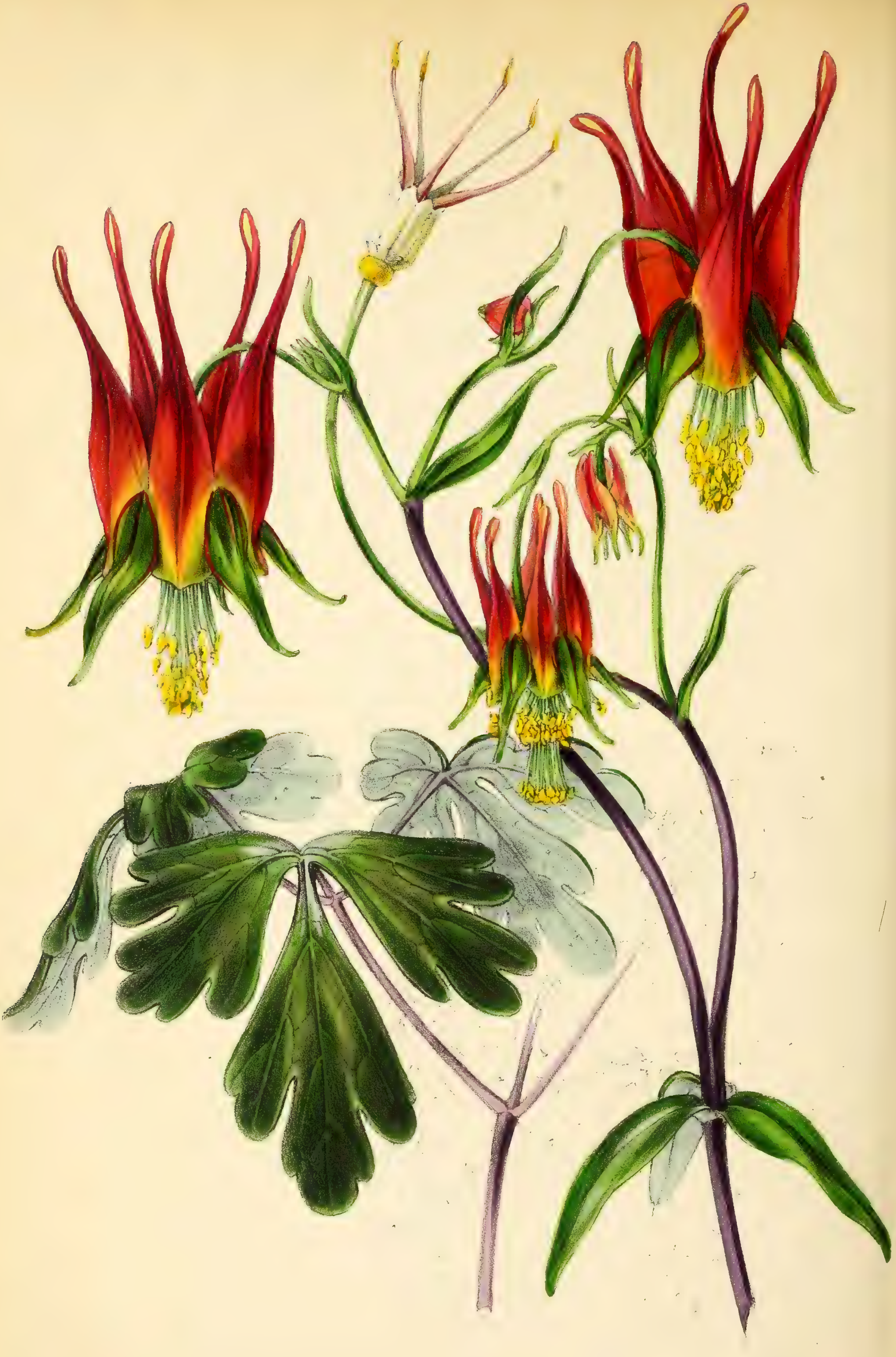
Var. QUADRICOLOR.—A compact growing plant, with large and specious flowers, which have four distinct colours, beautifully merging into each other.

FROM the common Snapdragon, which grows in such spontaneous abundance on old walls and buildings, to the richly-tinted kinds which decorate our flower-borders, the variations in the size, form, and colour of the blossoms are so numerous and interfused, that scarcely any race of plants contributes more to our pleasure, in an ornamental point of view. Notwithstanding, however, the profusion of sorts, and the almost interminable extent to which these may be multiplied, varieties are sometimes raised which are so marked in their characteristics as at once to become garden favourites, and to deserve the perpetuation of their peculiarities.

Of this last description was the carnation-striped Snapdragon, figured in our Magazine a few years since, and known as *A. majus caryophylloides.* Similarly worthy of notice and culture is the plant of which we here give a representation. We have not succeeded in learning its origin; but it has doubtless been derived from the intermixture of some of the best kinds by cross-fertilization, and has four separate colours, which, though indescribable, are readily discerned, and pass into each other at the edges in a very agreeable manner. We met with it first at Mr. Low's, Clapton, where the figure was taken, and where it flowered splendidly in the open border during the summer of 1842. It is conspicuous for a neat habit and foliage, and the inflorescence is exceedingly copious and good.

It must of course be propagated, like *A. m. caryophylloides*, by cuttings alone, as its seeds, when produced, would only beget other kinds, instead of multiplying itself. As a summer border plant, and probably as a favourable object for forming into beds in the flower-garden or elsewhere, it will be a useful addition, and should be purchased by every person who has an ornamental plot of ground to adorn. It is probable that wet might destroy it in winter; and the better plan of treating it would therefore be to strike young plants from cuttings in the autumn, and retain them through the winter in cold frames along with the general half-hardy flower-garden stock.

When its flowers begin to fade, they should always be cut off immediately, shortening the stem which bears them at the same time. By this means a good succession of blossom will be kept up, and the plants will be maintained in superior health.



S. Holden, del. & Litho.

Aquilegia Skinneri

AQUILÈGIA SKINNÈRI.

(Mr. Skinner's Columbine.)

Class.
POLYANDRIA.

Order.
PENTAGYNIA.

Natural Order.
RANÙNCULÀCÆ.

Generic Character.—*Sepals* five, deciduous, coloured, and petal-like. *Petals* five, on the upper side of the flower, spreadingly two-lipped; outer lip large, plane; inner one small; prolonged at the back into an entire hollow spur. *Capsules* erect.

Specific Character.—*Plant* an herbaceous perennial. *Leaves* chiefly radical, glaucous, on long petioles, biternate; leaflets cordate, deeply three-lobed; lobes variously cut, with blunt and rounded segments. *Flower-stem* panicled and bracteate. *Bracts* linear, awl-shaped, leafy. *Pedicles* curved, making the flowers droop. *Sepals* ovate-lanceolate, acuminate, keeled, green. *Petals* with a yellowish green and rounded limb, prolonged below into a very long, nearly straight, red spur, which is slightly clubbed at the extremity. *Stamens* numerous, much protruded. *Germen* with broad, membranous, curled wings. *Styles* three.

In the Botanical Magazine, from whence we have gleaned the substance of the preceding description, it is stated that this fine species was sent to Woburn Abbey by G. U. Skinner, Esq., from Guatemala; and it flowered in the gardens at Woburn for the first time. Its most prominent characteristics are the great length of the spurs in the flowers, the protrusion of the stamens, and the brilliant red colour of the lower part of the flower-spurs. It ranks with the admirable *A. glandulosa* among the best members of the genus.

Having, in some places, been very improperly treated by being placed in a stove or warm greenhouse, and forced too early into flower, its appearance in a few of the London collections this year has been far from favourable or natural. The flowers have been much impoverished in regard to size, and altogether deprived of that splendid colour which constitutes their leading attraction. Hence it has been deemed inferior even to *A. canadensis*. It should be remembered, however, that a forced specimen of a hardy plant affords no criterion of its merit; and that the proper season at which this species should blossom is the months of August and September, while its proper position is the open ground.

Our drawing portrays a specimen which flowered vigorously with Mr. Glendinning, nurseryman, of Turnham Green, towards the end of last July. Being very correctly coloured, a good notion may be gained from it of the plant's beauty.

Although the species seems to be purely hardy, and will therefore attain its best character in a sunny border, thoroughly drained, and composed of a free loamy soil, it may not be considered unworthy to be grown in pots for the greenhouse or conservatory. Where managed in the last-named manner, it should be kept in a peculiarly light and airy situation; for, unless it be grown in a cool place, it will bloom too soon to bloom finely, and without plenty of sun, its glowing hues will degenerate into something very little better than a dingy compound of red, green, and yellow.

It can be multiplied freely by division, in the same way as the other Columbines. Possibly, also, it will ripen seeds in a warm border, open to the south; and, should such be the case, the means for a very abundant increase will be furnished.

We recommend all those who cultivate the plant, (and it is highly deserving of general favour,) to guard against the error of forcing it in any way, or they will inevitably be disappointed in it.

GARDENING AS A SCIENCE.

No. IX.

From the subject of the nutriment of plants obtained by the decomposition of vegetable matter, chiefly, the mind is naturally led to the investigation of those vessels or organs which receive the fluids from the earth, and elaborate the several products essential to the plant, and specific to it. But here we are at sea. Every attempt has failed to determine what the crude sap really is; and we are equally at a loss to settle the question, whether the leaves are absorbent as well as transpiratory organs.

Certain it is, that chemistry, as a science of analysis, is utterly powerless to solve the mysteries of vital assimilation: and we deem it little better than waste of time to advance one conjecture on the ground of any influence that can be drawn from the analysis of gums, resins, salts, sugar, bitter principle, or colouring matter, &c., the effete productions of organized life.

Still, Science acquires importance by the able researches of philosophers; and having before us several invaluable manuscripts of the late President, Mr. Knight, we hope our readers will be gratified by the perusal of a few extracts, which will prove to what extent the laborious and profound investigations of that great man were carried.

The name of the celebrated Dutrochet may yet be familiar with many: he was a correspondent of Mr. Knight, and once visited him at Downton Castle. Mr. Knight thus recites an experiment by which the French philosopher at one time thought he could throw some light upon the phenomena of the sap:—" M. Dutrochet has made some very singular, and, I think, important discoveries, which show that the power which causes *lighter* fluids to pass through animal and vegetable membranes is very wonderful. He bound three folds of recently extracted bladder round the bottom of a tube of glass, and through these folds, under ordinary circumstances, no fluid could pass; but upon a solution of one part of sugar in two parts of water being put into the glass tube, the water" (contained in another glass vessel wherein the tube was placed) " passed rapidly through the three folds of bladder, not only in opposition to gravitation, but in opposition to that of the pressure of a column of forty-five inches of mercury, nearly equivalent to a pressure of twenty-two pounds and a half upon an inch square, and of fifty feet perpendicular of water. I had previously proved that the specific gravity of the sap of trees in the spring, increases in proportion to its distance from the ground, and that a good deal of saccharine matter is found in the alburnum of trees in the spring, which contained none in the winter."

M. Dutrochet resided with Mr. Knight nearly three weeks, and both gentlemen arrived at the conclusion—" that the water and nutriment absorbed from the soil ascend through the *cellular substance* of the alburnum, and pass through vessels *cellular in structure* which surround the bundles of the spiral tubes; that the nutriment absorbed, becomes the true sap and living blood of the plant by *exposure to light* in the leaf, and that it descends by the bark,—wherever plants have bark—by which the matter which forms the layer of alburnum is deposited; and that whatever portion of the true sap is not thus expended, sinks into the alburnum through the mis-named medullary processes, and joins the ascending current. As autumn, however, approaches, the expenditure of sap diminishes, and it then accumulates in the alburnum to be employed in forming the young shoots and leaves of the ensuing spring. I am in possession of a thousand facts to support this hypothesis, and not in possession of one in opposition to it." Sept. 2. 1830.

Great and high as are our authorities, we must not attach to them a too implicit faith. Plants are *living* beings, or they are not; if endowed with a vital principle, we cannot by any possibility prove that they are not more or less sentient, and, in a degree, however low it may be, possessed of the faculty of volition, and may, to a corresponding extent, select their food, and be susceptible of enjoyment. If, on the contrary, their vitality be purely vegetative, the only agent to which we can possibly refer the phenomena of the sap, its ascent, distribution, and assimilation, is ELECTRICITY;—and in truth, all the late discoveries of the decomposition of water, tend to confirm the hypothesis. This was candidly stated to Mr. Knight about the period when he became interested in the experiments of Dutrochet, which, as he justly observed, were productive of phenomena altogether wonderful. These phenomena, however, cannot bring to light the agency which induces the introduction of the living sap; for, they only go to prove,—what Dr. Mitchell of America has subsequently confirmed,—that when membrane is interposed between fluids of different specific gravities, it operates as a medium of interfiltration between the two. So far, however, as *membrane* is concerned, the cellular membranous tissue of the alburnum and bark, containing fluids of various densities, may produce a variety of those attractive interblendings or organic changes, which have been too rashly termed *chemical*, since chemistry is utterly incapable to effect or to interpret one of the combinations which result from vital agency.

On the question of electricity Mr. Knight thus expressed his opinions:—" I have long believed the electric fluid to be the agent that causes all secretions, properly so called, to take place both in plants and animals. The galvanic fluid will cause the process of digestion to go on, and of course the secretion of the gastric fluid." " I thought, and still think, the discovery of these and other facts respecting the powers of the galvanic fluid of much importance in a medical point of view. I do not think that it can be applied in any way with advantage to plants. I witnessed the result of some experiments made under the inspection of Dr. Wilson Philip, and by M. Dutrochet, during a visit he paid me at Downton, and the effects were always injurious, however feeble the power. Nature gives enough, I conclude."

Mr. Knight was not then aware, nor could he be, of the stupendous discoveries, made by Dr. Faraday, of the universal presence of electric action, whenever the elements of water are disturbed; otherwise, he would have been still further confirmed in the luminous view which he had already adopted.

To those discoveries we have before alluded, and therefore shall only remark, that whenever a manure appropriate to any plant whatever is within the range of its roots, that manure is gradually, but more or less rapidly decomposed, and its constituent elements converted in water and hydrocarbons, during which conversion a volume of electricity is disturbed equivalent to the quantity specifically essential to its combining power, and amply sufficient to propel the raw sap, so prepared, through the membranous tissue of the roots; and thence, according to Knight, into the cellular vessels of the trunk or stem.

The *spiral tubes*, or system of coiled vessels, were once deemed to be the conductors of the sap; though by the earlier physiologists, they were thought to be merely air-vessels. Speaking of their position and office, Mr. Knight observes:—"They are placed between the passages through which the sap ascends, which passages are in fact surrounded by them; and they are certainly so placed as to enable them to act by external pressure. They appear so restless, when suddenly taken out, that I have offered a conjecture that they were not formed to be idle; but, not liking to indulge much in speculation in my communication to the Royal Society, I only said that they appeared to me to be *appendages* to the sap-vessels, and not to carry any liquids themselves. I took a good deal of trouble to ascertain whether the spiral tubes, and those tubes which contain them, were at any time filled with liquid; and I, under all circumstances, uniformly found the tubes empty, and the spiral thread dry in all *mature*—that is full-grown—leaves. The experiments from which I drew my inferences were, I think, as well conducted as they could be. I often adjusted my microscope to the stalk of a leaf, growing in its natural position, and in the full execution of its office; and then, after having cut through the epidermis only, I have, by means of a small windlas, with soft woollen yarn, severed all connection between the plant and the leaf, except that of the spiral tubes; and, under such circumstances, those tubes were always empty, and their threads dry; and having suffered the leaves to remain exposed to the sun by the side of others wholly detached from the plants, all died and dried within the same period of time. The spiral threads therefore, I think, do not convey the ascending sap."

If we consider these minute experiments, and view the structure of these coiled tubes, their great strength, and elastic power—which any careful person can discover by examining the tender green twig of an elder—it will appear pretty evident that they must act as springs, and thus aid, mainly, in producing and sustaining the graceful rotatory movement of which spray and herbage are susceptible. Some mechanism of the sort is absolutely required, and none appears so entirely applicable as the system of spiral vessels. These vessels may also convey air or gases throughout the structure, and perform a second very important roll in the vegetable economy. The cellular system, we are certain, contains fluids ; and thus we obtain some rational view of those organs of the vegetable structure which are destined to convey and laborate the vital, nutritive fluids—liquid and aëriform—of the plant.

GENERAL TREATMENT OF FUCHSIAS.

There is scarcely a tribe, throughout the whole vegetable kingdom, that is more interesting to general cultivators than Fuchsias. Susceptible of such a great variety of treatment, and yet capable of reaching a large share of perfection by the very simplest means, they come quite within the range of the cottager's resources, are exceedingly well adapted for window culture, and are yet fit to shine in the gardens or conservatory of a palatial residence.

Few exotic shrubs need so little attention in point of culture ; but, at the same time, there are few which, however difficult to manage, do not receive, in proportion to that difficulty, a greater amount of appropriate treatment. And although, in many places, splendid specimens are to be seen rewarding the cultivator for the trifling pains he has taken to give them suitable accommodation, while, in others, the accidental occurrence of favourable conditions occasions similar results, the majority of gardens are entirely devoid of the superior attraction which this charming flower would furnish when grown as it should be grown.

Possibly the reason for such a comparative dearth of properly cultivated Fuchsias is to be found in the extreme simplicity of the means by which such perfection may be attained ; for it is generally observable in the world of floriculture, that, where any intricate, or refined machinery, or delicate and arduous process, is required to effect an object, a larger portion of success is realized than when the method of accomplishing it is plain, and straightforward, and easy. So strong is thus the desire to call personal ability and skill into operation, and in this way to gain credit for the ends brought about, that plants of easy cultivation are often neglected by the experienced and accomplished grower, because persons of the most slender acquirements may almost keep pace with him in such a pursuit.

Digressing, for a moment, it is of some importance to show that a practice of that description, in which men of talent sometimes almost unconsciously indulge, is based on a false principle, and is calculated very seriously to prejudice the appearance of gardens in which it is carried out. There is *no* class of plants, it may emphatically be urged, with whatever apparent spontaneousness they flourish, which a clever gardener cannot grow better than one less thoroughly informed on matters of cultivation. And he is the wisest man who, in a general way, selects such as are at once ornamental and readily managed on which to expend his skill. Good treatment will always tell with greater or lesser force, and it commonly manifests itself most clearly on those objects which are operated upon with readiness.

Fuchsias afford a pointed example of the truth of this position. Although so free-growing that every one may have them in an ornamental condition with very little expenditure of labour, there is a most marked difference perceptible between the miserably stunted plants of the unpractised grower, and the large, glowing, luxuriant specimens reared by the skilful culturist. Plants of the latter character are, it is true, occasionally met with in the hands of the ignorant, where, by fortuitous circumstances, or by the pursuance of good advice, they have been raised to an unusual degree of beauty. Cases of that kind are, however, sufficiently rare to render superiority an ordinary indication of skill, and this superiority may be as conspicuous in the instance of a *Fuchsia* as in one of the most delicate of the Heath tribe, notwithstanding the fact that a tender Heath cannot be grown at all by a person knowing nothing of the art of culture. Merit, in everything, (plant-growing included,) can very seldom be determined otherwise than by comparison; and though the extremes of difference may hardly seem analogous, there is as much additional merit in growing a *Fuchsia* splendidly, to merely keeping it alive, as there is in cultivating a Heath well, to being unable to cultivate it at all.

This proposition being now, as we think, duly established, and it being pretty clearly proved that Fuchsias cannot reasonably be neglected, because they appear to require no cleverness to bring them into a handsome state,—since cleverness is to be estimated by comparing its attainments with what the uninitiated are able to effect,—we shall advert to the principal features of difference between an inferior and a highly-cultivated Fuchsia, and explain how these differences are originated.

A prevailing fallacy in the management of Fuchsias which are grown in large establishments, is to treat them like trees, and, by getting them to a remarkable size, in respect chiefly to height, it is supposed that a state most nearly approximating to the natural one, and therefore the most beautiful, will be reached. It is not of much consequence whether this tree-like character is formed by pruning so as to make the plant a standard, or whether it is obtained by leaving a vigorous specimen to take its own course. In the first-mentioned instance, a highly curious object may be created; and, if too great a height is not sought, a plant might thus be rendered in some measure ornamental and free-blooming. In the second case, there will be a more profuse production of bloom, and, for a lofty conservatory, such plants might be valuable. Both these classes of specimens are, however, very far from being equal, in regard to beauty, to those which are treated as low bushes, in a way we shall afterwards describe; for the *Fuchsia* is not, from its nature, adapted for attaining its highest elegance and loveliness when grown as a tall or standard plant.

In gardens of smaller extent, where the *Fuchsia* is cultivated as a pot-plant, the great error is one of an opposite class; for it is there kept in much too diminutive a state. Confined at the roots, and grown in the commonest soil, which is not at all enriched, Fuchsias are mostly maintained in a small stunted condition, and neither bloom finely, nor become handsome specimens. Of this kind, are the majority of those seen in the windows of both cottages and drawing-rooms, as well as those in limited greenhouses. If they bloom at all, however scantily and miserably, enough seems to have been obtained from them, and people appear to have no idea that, with the same amount of trouble, backed by a little philosophy and forethought, they can have specimens really worth looking at, and fitted to command admiration.

Other places present themselves in which Fuchsias are turned out singly into the borders, or planted in groups; and, once established, are considered to need no further tendance; so that, whether they are destroyed down to the ground by frost in the winter, or whether only the points of the shoots are killed, and the remaining stems and branches left uninjured, they are alike suffered to adjust themselves to these peculiarities of circumstance, and to proceed without any assistance or cultivation. In consequence of this, the old woody parts, which mild winters do not damage, throw out their young laterals in the spring, and these are weakened by having to draw their supplies through the old wood, while they also materially impoverish the new suckers that are sent up from the roots; and so the whole plant is frequently deteriorated, and robbed of its splendour. With the occurrence of another and succeeding warm winter, the deterioration is, in most cases, more than perpetuated.

Now, when a plant of any of the common Fuchsias is placed out in the open border, and the winters happen to be just severe enough to deprive it of all its branches down to the very base, without harming the vital part which is just at the junction of the stem and roots, it will, if the soil be of a tolerably good nature, and the aspect well open to the sun, acquire the best, richest, and most ornamental character of which a *Fuchsia* is susceptible. It will become quite a thicket of healthy stems, annually increasing in number, and occupying a much wider circumference, while the branches will be abundantly laden with blossom throughout the whole of the flowering season. No starved specimen in a pot, or tree-like plant grown to whatever height, will bear the slightest comparison, for beauty or showiness, with such an object.

Here, then, we conceive, are embodied the various particulars of treatment which combine to elevate a Fuchsia into something very superior to the wretched things of this sort that are usually met with; and, indeed, into a plant of great, and decided, and enduring attractiveness. And though there be, in the case referred to, merely the elements of similar success as relates to pot-culture, these may be readily adapted and applied to every varying condition. We shall now enumerate them, and briefly dwell upon each.

The first on which we must speak is freedom for the roots; and we would have it distinctly understood, that no ordinary Fuchsia will thrive if its roots are at all cramped. Proof of this is to be found every day in multitudes of windows and greenhouses; whereas, an evidence, equally convincing, that the reverse of this condition will entail opposite and proportionately successful results, is afforded by the many plants that meet the eye in open gardens, where nothing obstructs the extension of the roots. If a *Fuchsia*, therefore, is to be grown in a pot, it must have plenty of room therein to spread out its roots, or it will never flourish; and as the size of the plant increases, the pot in which it is put must be concurrently enlarged; or rather, a larger pot should be supplied in time to prevent the roots from growing too near the edge, and thus getting stinted for food.

But as it is impossible, in a pot, to give a plant the same liberty for its roots which it would have in the free soil, this deficiency can be partly atoned for by supplying it with a somewhat richer soil. Consequently, for potted Fuchsias, we would mix a small proportion of well-decayed and pulverized manure with the loam which should be the staple ingredient in their compost, and a trifling quantity of leaf-mould might advantageously be added, as well for accomplishing the like purpose as for aiding the drainage. The kind of loam that should be chosen is that fresh fibrous soil from beneath the turf of a pasture, which crumbles readily between the fingers, and is neither clayey nor peculiarly sandy. This should constitute nearly two-thirds of the compost; the remaining parts being one-sixth of leaf-mould, and one-sixth of rotten manure. Heath-mould may be altogether dispensed with, unless it be very fibrous, when it may displace one-sixth of the loam. Where, from any cause, there is danger that the drainage will be interrupted, some broken sand-stone, in pieces of about a quarter of an inch diameter, can be mingled sparingly with the soil.

Next to the provision for the due accommodation of the roots with suitable soil and an adequate quantity of it, there must be secured to the plant, during the whole time of its growing stage, a full and uninterrupted exposure to the rays of the sun; so far, at least, as this can be done in any glazed structure. Nothing tends more to diminish the healthiness and productiveness of Fuchsias than that partial and imperfect light which they get from a western or eastern window, or through any window which is much covered by blinds, or in a greenhouse where they are surrounded by larger or more leafy plants, or where, from the construction of the building, or from any other circumstance, they are at all shaded. This rule likewise holds good in regard to such specimens as are planted out, either in conservatories or the flower-borders. They will not bear shade without detriment to the leaves and general appearance, and a reduction of the number of flowers. It is on this account that plants of *Fuchsia*, which are grown in pots by cottagers, assume such a healthy hue and bloom so well when they are placed out in the open air during summer; and, no doubt, if the transition from the greenhouse to complete exposure were effected gradually, it would be beneficial to all potted Fuchsias to have them in frames or houses, from which the lights could be quite removed in the summer season.

The most peculiar feature which we have to notice in the management of Fuchsias, however, and one which is very rarely adopted, otherwise than accidentally, is the cutting down all the stems, &c., each year, to the same extent to which they are destroyed by frost in hard winters, in order to make the plants throw up an additional quantity of new and stronger stems in the following spring. This, we have fully ascertained, is the most effectual plan for insuring a fine display of flowers, a great abundance of healthy shoots and foliage, and plants which progressively improve every year, instead of degenerating, and becoming less prolific. It includes as properly those which are subjected to pot culture, as those which occupy the open borders, and is, in fact, applicable to any system of treatment, and to almost all the known kinds of *Fuchsia*, hybrids as well as species.

Several advantages attend the employment of this method, beside that of improving the plants. The leading one is that it facilitates, or renders more convenient, their preservation through the winter. By having all their wood cut away, they are more readily stowed away in a dry place, are less likely to be injured, and, by beginning to grow later and more regularly, can be better attended to, and with greater certainty, in the spring. A *Fuchsia* that is not thus cut down commences growing at so many points, and so irregularly, that it is much more difficult to catch the precise time at which it should be removed from confinement, and next to impossible to keep it in a symmetrical form without considerable pruning. According to the system here laid down, no pruning will be requisite beyond the general and severe pruning already spoken of, unless the stems should get too numerous, and demand thinning.

It can hardly be needful to offer any rules about the cutting back of Fuchsias. Still, lest mistake should arise, we may observe that it should be done as soon as the leaves fall, or about the beginning of November. Each stem should be cut carefully and cleanly down to within about half an inch of the roots; and, after a short exposure to the sun to dry the wounds, the plants may be put away for the winter in a cellar, frame, room, or other convenient place, that is kept sufficiently dry to prevent damp accumulating or frost entering, and yet not so dry as to impair the plants' vitality, nor so warm as to start them into growth. They will begin naturally to throw up shoots towards the month of March, when they can be re-potted and put in a greenhouse or frame; and if the stems arise too numerously, it is better to cut out the weaker ones when they are just pushing than to leave them till they have grown to nearly their full size, and thus to waste the resources of the plants.

As we are well aware of the danger which may accrue from the broad and simple statement of any rule that is liable to be excepted from, we will mention a class of Fuchsias, which, we think, would not so well endure the treatment above recommended. It is that group of hybrids which have *F. fulgens* or *F. corymbiflora* for one of their parents, and take after them in producing their flowers at the extremities of the shoots in clusters. These, it is probable, would scarcely come well within the plan we have prescribed; though a trial of it might possibly prove it to be of service to them as much as to the others. At any rate, all of them should be pruned every autumn to within two or three eyes of the main stem; for it is by pruning alone that they can be cultivated to their greatest perfection. Even *F. fulgens* itself might be so treated by way of experiment; but its more weakly shoots must then be duly cut away every spring; or, what is better, the superfluous and least healthy buds may be cut off as they are about to develop themselves.

It will be seen that we have not, in this paper, gone minutely into the details of Fuchsia culture. Our intention has been to avoid these, in the belief that they are such as are common to most other plants, and are therefore too familiar to need particularizing. We have only brought under review those points which appear to be of primary moment, and by attention to which we believe that our collections may be immensely enriched, while the tribe will be cultivated with a universality and a success to which no other class of shrubby exotics can offer the least pretensions to a parallel.

ON TRAINING HONEYSUCKLES, AND FORMING THEM INTO STANDARDS.

The common Honeysuckle, from its elegant climbing habit, the wild gracefulness with which it flings abroad its uppermost shoots, the prodigality of its cheerful blossoms, and their luxurious fragrance, is a general favourite wherever it is known. It belongs to that interesting class of plants, scattered rather sparingly throughout the vegetable kingdom, which secure to themselves universal esteem, and are therefore cultivated very extensively. Either this, then, or some of its varieties, or other allied species, are cherished in almost every garden that will admit them.

In most parts of England, too, the wild woodbine is found profusely adorning the hedges by road-sides and along retired lanes, where, during a large part of the summer, it enlivens the wayfarer by its loveliness, and regales him, especially in the evening of the day, with its grateful odour.

Possessed of such sterling charms, it ought to be cultivated in the gardens of all, whether peasant or peer, and in every variety of form which its nature will allow. As it is exceedingly accommodating with regard to treatment, it seems much to be regretted that, in most instances, it is merely grown in those artificial circumstances where a wall or a trellis, or something equally formal, is afforded for training it over. Supported by a pole, so as to compose a pillar, it is hardly ever to be witnessed; pruned into a dwarf bush, and thus making a fine border shrub, it is still seldomer seen; trailing over rock work or a rocky bank, we have never yet observed it; nor have we ever noticed it planted thickly as a bush, and forming entangled beds, nor growing amongst ivy, nor planted extensively to twine round the stems of trees in shrubberies, nor covering bushes of Hawthorn or similar plants in the ruder parts of pleasure-grounds or parks; nor, in more than two or three places, pruned to a standard of four or five feet high, and developing a large half-drooping head, which almost sweeps the lawn on which the specimen stands. And yet, for each and all of these objects, it is peculiarly well adapted, while its treatment, according to these several plans, would in itself give a great and delightful variety to a pleasure-garden. A short sketch of all these methods may not be unacceptabe.

Honeysuckles are not, for the most part, at all suitable for training on walls. They are chiefly twining plants, and require something to wind and cling around. The Etruscan and yellow-flowered kinds, (*Caprifolium etruscum* and *flavum*,) with the evergreen sort, (*C. sempervirens*,) are, however, tolerably fitted for clothing low walls. But they will need much pruning in such situations, at first, to prevent the lower branches from becoming bare, and to induce them to throw out laterals freely.

For trellises, of various descriptions, Honeysuckles are much more appropriate. They can be trained over these so as to have almost a natural appearance, and whether the trellis be in the form of an espalier, or an arch over a walk, or a covering to an arbour, or any small erection, they will only need tying to it by some of the main branches, while the other shoots can be wreathed into the trellis. Here, as in the last-named case, much pruning will be wanted for a time, to get the plants into a good lateral and flower-bearing condition. A pretty diversity in training Honeysuckles thus might be obtained by the use of poles, with chains or ropes hanging in a deep curve between them, so as to compose festoons. By fastening two or three main stems along these chains or ropes, and pruning them to give an abundance of laterals, very elegant festoons might be formed in a few years.

Supporting Honeysuckles by poles is much superior to the method of sustaining them by trellises, because more natural, and better calculated to show the plants to advantage. Indeed, this is one of the best of all ways of managing them. The poles may be from six to ten feet high, and either single, or in threes joined together at the top, or in threes kept apart by cross-bars. Perhaps the single poles are the most beautiful. A specimen, planted at the base of one of these, may be tied to it, or suffered to twine around it; and as it rises, the leading shoots should now and then be stopped, in order to force them into a lateral growth, for the main beauty of a thing of this sort consists in having the entire pole well clothed with branches and blossoms. If the former are obtained, the latter are nearly sure to follow.

Pruned so as to make a dwarf border shrub, the Honeysuckle will add a very agreeable feature to a shrubbery border. It has only to be efficiently cut down while young, and it will soon acquire the habit of making nothing but short blooming shoots; or, should it occasionally send out a long rambling branch, such as it usually climbs with, this must be cut off at once, and its disposition to produce such shoots will in a very short time be checked. It can then be pruned every winter as an ordinary shrub, taking care to remove straggling shoots in the summer when they appear.

For trailing amongst rock-work, or over a rocky slope, Honeysuckles are exceedingly good ornaments. They have a natural propensity to trail; and if the shoots are here and there plunged beneath a small mass of rock, or merely buried in the soil for a few inches of their length, they will thereby gain fresh vigour, and will not too much conceal the bolder outlines of the rockery. Pruning will be as useful in this case as in the others that we have mentioned; for, by shortening the lateral shoots, they will be induced to grow in clusters, when the display of flowers will necessarily be more effective.

Nothing would make a more beautiful bed or mass on a lawn, or in some retired part of a pleasure-garden, than a group of the late-flowering common Honeysuckle. It should be planted about eighteen inches or two feet apart, treated like a low shrub, as already described under that head, and, after the plants have gained some size and strength, a few of the more spreading shoots may be allowed to grow into the other plants, and thus an interwoven mass will speedily be created, which will simply require a little pruning and regulating each winter.

What we mean by planting Honeysuckles amongst Ivy is, where Ivy is used for mantling a building, or a ruin, or rocks, or is permitted to overrun a small tree for the sake of picturesqueness, a few Honeysuckles, if trained up amidst it, would greatly improve and diversify its appearance.

The practice of letting Honeysuckles mount the stems of trees in plantations is pursued already in some gardens. It deserves, however, to be more frequently followed. The trees chosen for the purpose should be principally round the outside of shrubberies, because the Honeysuckle will flourish best where it can get air and light. A small number of trees may always be abandoned to such an object, even should the Honeysuckle strangle them, which it will not inevitably do. With care to keep the plants from being blown away from their support, they will not demand other attention.

Every one who has visited old forests, or forest-like woods, must have been pleased with the aspect of Honeysuckles growing over bushes of Hawthorn, the common Sloe, &c., in such places. To obtain these features in the rougher portions of pleasure-grounds and parks, is surely worth attempting; and this may be done by using bushes of the Hawthorn as supports for the Honeysuckle. By planting the latter at the bottom of Hawthorn bushes that are three or four feet in height, it will, if left to itself, give a character of the most picturesque beauty in three or four years.

There is only one other method of treating the Honeysuckle which we shall at present specify, and that is the plan of training it to a standard of from four to six feet high. This is a mode to which we wish to afford some prominence, in connection with a very similar way of managing the common Ivy, which we brought forward in a previous Number. As a companion plant to a standard Ivy, indeed, a standard Honeysuckle would be an extremely desirable object. They are both produced by the same means. Pruning to a single stem, and when this has gained the required height, stopping it, and producing a head of branches, is all the preparation needful; and a trifling subsequent pruning will carry the plants forward without further trouble.

To establish a Honeysuckle as a standard, it should have a stake to uphold the main stem; and as it will be advisable to continue this after the head is formed, lest a strong current of wind should overset and break it, the stake should be an iron one, which will also contribute to neatness. The plant will look best on a lawn, that is either flat or sloping, and the branches may, when the head is duly formed, be left almost to sweep the grass. If the plant be on a slope, the longest branches ought to be left on the lowest side, as this will create a greater elegance from the valley below.

Perhaps the *C. Periclymenum serotinum*, or the late-flowering variety of the Woodbine, is most to be preferred for a standard. There is little choice necessary, however, as most of the Caprifoliums would answer the design, and *C. sempervirens* would probably be especially beautiful.

FLORICULTURAL NOTICES.

NEW OR BEAUTIFUL PLANTS FIGURED IN THE LEADING BOTANICAL PERIODICALS FOR SEPTEMBER.

ACA'CIA ROTUNDIFO'LIA. A very pretty new species, introduced "by James Backhouse, Esq., from Hunter's River (he believes), New Holland, in 1842; and it flowered copiously in the spring of the following year, in the greenhouse of the Royal Botanic Gardens. It is a straggling plant, but when trained upon a trellis, in a garden-pot, it makes a very elegant appearance, with its graceful drooping branches, and copious heads of blossoms, more copious than the leaves. It seems quite distinct from any described species: in some respects, indeed, resembling *A. undulæfolia*, but very different in the inflorescence and phyllodia." It forms a shrub of three or four feet in height, with angled and slightly downy branches, and roundish unequal leaves. The flowers are very numerous, in small heads, and of a bright yellow colour. *Bot. Mag.* 4041.

ACA'CIA SPECTA'BILIS. "Among 340 species of *Acacia* enumerated by Mr. Bentham, this is one of the finest; and it certainly is the very handsomest we have seen from New South Wales, beautiful as many of them are. The leaves and branches are covered with the most delicate bloom, and the flowers, produced in large masses at the end of the shoots, are of the clearest and softest yellow. It is a native of Wellington Valley, and other places on the east coast of New Holland, where it was found by the late Mr. Allan Cunningham, and by Mr. Frazer. For its introduction to this country we are indebted to H. B Lott, Esq., who presented it to Messrs. Lucombe, Pince, and Co., of Exeter, from whom a flowering specimen was received last April. It belongs to the same section of the genus as *A. discolor* and *dealbata*, but is probably more decidedly a greenhouse plant than they are, for it comes from the country to the north of Sidney, and therefore inhabits warmer latitudes. From both it is known by its broad, smooth, glaucous leaflets, and by the gland found in these species, in connection with the petiole, being replaced by a depression." *Bot. Reg.* 46.

ERYTHROCHI'TON BRASILI'ENSIS. This fine Brazilian plant is stated by Messrs. Nees and Martius to form a small tree, at the most ten feet high, with the habit of a *Theophrasta*, the stem being altogether unbranched, and the long leathery leaves collected at its end. From amongst them rises a long three-cornered flower-stalk, at the end of which are a few large white flowers, conspicuous for their fine red calyxes, from which circumstance the name has been contrived. It is said to inhabit close shady places in the virgin woods of Brazil, preferring a granitic soil, especially near the Presidio of John the Baptist, in the province of Minaes." It flowered for the first time in a stove at Syon, the seat of his Grace the Duke of Northumberland, in July last. "It is one of those fragrant trees of the tropics whose foliage is filled with a sweet volatile oil, like that of the orange, and whose aromatic tonic bark is valuable as a remedy for the fevers of such countries." *Bot. Reg.* 47.

EUCAL'YPTUS SPLACHNIC'ARPON. Sir W. J. Hooker gives some very interesting particulars relative to the species of *Eucalyptus*, collected by Dr. Joseph Hooker and Mr. Backhouse, in Van Diemen's Land. The chief facts relate to their immense size. Specimens had been observed which were fifty-five feet round at five feet from the ground, seventy feet in circumference at the surface of the earth, and supposed to be two hundred and fifty feet high. Four persons could easily walk abreast up the trunk of one which had been prostrated. "The present species is a native of King George's Sound, and probably attains to a considerable size. Its discoverer, Mr. Allan Cunningham, who introduced it to the Royal Gardens of Kew, speaks of it, in his Herbarium, as attaining a girth of twelve or sixteen feet. It has also been found at the Swan River, by Mr. Frazer and Mr. James Drummond, who speak of it as an immense tree, the general timber of that colony. The flowers are among the largest of the genus," and of a greenish-yellow tint. It forms, in the greenhouse in this country, a tree fourteen or fifteen feet high, with copious branches, chiefly at the top, and very thick ovate-lanceolate leaves, which have a stout reddish midrib. The flowers are borne in the autumn. *Bot. Mag.* 4036.

GASTROLO'BIUM ACU'TUM. "A handsome greenhouse shrub, flowering in the greenhouse in the month of March. It was raised from seeds sent from the Swan River, by Mr. James Drummond, to the Royal Botanic Gardens of Kew, in 1842. Its red and deep yellow flowers, and its glossy ternate leaves, make a very pretty appearance at that early season of the year." It grows from a foot and a half to two feet in height, with numerous erect and somewhat angled branches; which, together with the leaves, are downy or hairy in a young state. The leaves are ovate-lanceolate, acuminate, and have a spiny point. The flowers are solitary, or in very short racemes. *Bot. Mag.* 4040.

ISOPO'GON SCA'BRA. "This is one of the many Swan River novelties for which our greenhouses are indebted to the researches of Mr. James Drummond. Seeds were sent by him to the Royal Botanic Gardens at Kew, and the plants bore their handsome flowers in April, 1843. The present is one of the handsomest of the genus; for the heads, or cones of flowers, are large, purple or deep rose colour, exhibiting numerous yellow styles and anthers in a circle as they expand; and these heads are nestled, as it were, among the green foliage," like some of the Banksia tribe. It is a shrub of about four feet high, with an upright and scarcely branching stem, and narrow foliage, which is variously divided into wavy segments. *Bot. Mag.* 4037.

OTHO'NNA TUBERO'SA. "A plant little known in our gardens, we believe, yet not unworthy of cultivation. It appears to have been introduced from the Cape to the Royal Gardens of Kew, in 1774, by Mr. Masson, and then lost to this country. Tubers, however, were again sent to the same establishment by Mr. Anderer, in 1842. These produced their showy yellow flowers in August of the same year." It is a dwarf herbaceous plant, with a solitary tuber, like a *Cyclamen*, producing three, four, or more stems, six or eight inches in height, and one large obovate obtuse leaf at the base of each of these. The remainder of the leaves are very small, and mere bracts. The blossoms are large, solitary, and terminal. *Bot. Mag.* 4038.

RHIPSA'LIS BRACHIA'TA. "This new species of *Rhipsalis* was received by Mr. Moore, at the Glasnevin Botanic Garden, from Mr. Tweedie at Buenos Ayres, and it produced its flowers with that able cultivator in the month of March, 1843. It is very different from any of the species described by Pfeiffer," and is about eight or ten inches high, growing erectly. "The main stem is cylindrical, but by no means jointed; it bears a few scattered, articulated flowering branches below, and above, very many horizontal branches, which are again divided, always opposite, brachiate, and with more numerous and shorter joints as they come nearer the ultimate divisions: these joints are from half an inch to an inch long, two lines broad, punctated, and at their points are deciduous hairs in tufts, the ultimate articulation being always terminated with a tuft of hairs:

the colour is pale glaucous green. The flowers are rather large for the genus, pale greenish yellow, and terminal or on divaricated articulations upon the lower part of the stem."—*Bot. Mag.* 4039.

Schiza'nthus ca'ndidus. A beautiful and most distinct species, which has "pinnatifid leaves, with linear, entire, rather wavy segments. The flowers are pure white, without a stain of any other colour; their lower lip has the middle lobe divided into two acuminate flat segments, and the two lateral ones setaceous and shorter. The upper lobe is two-parted. This was found wild near Coquimbo by Mr. Bridges. It is a very pretty half-hardy annual, and well worth cultivation."—*Bot. Reg.* 45.

Sci'lla Peruvia'na; *var.* di'scolor. "That the Peruvian Squill does not grow in Peru is well known, the name having been applied by Linnæus in consequence of some erroneous statements of Clusius or Morison. Neither is it found in India, as one of its old synonymes would lead us to suppose. Its real country is Portugal, about Cintra, according to Brotero; Algiers, where Desfontaines found it in corn-fields; Tripoli, on hill sides, according to Della Cella; Corsica, near S. Bonifacio, where Seraphini found it; clayey hills in Sicily, as we learn from Gussone, and even the sterile hills outside the gate *Degli angioli* of Genoa, as we are assured by Viviani. The present plant was sent from Algiers to the Hon. and Very Rev. the Dean of Manchester, and therefore agrees in its native country with *S. peruviana.* At first sight, however, it seems so different, that it cannot be regarded as the same species. But, by a careful examination, no other distinction has been discovered between them than that of the colour of the flowers, which are neither white nor bright blue, as in the previously known states of *S. peruviana*, but a dirty pale fawn colour. No doubt it is as hardy as the Peruvian Squill; and although not so handsome, still worth a place in a bulb garden."—*Bot Reg.* 48.

Stanho'pea Martia'na; *var.* bicolor. *S. Martiana* is "a native of Mexico, discovered by Baron Karwinski in 1827, and afterwards by M. Galeotti. It is one of the most distinct and magnificent species of the genus, and in the magnitude of its blossoms is second only to *S. tigrina.* The sepals are straw-coloured, or almost white, faintly and sparingly marked with clusters of little vinous dots; the petals appear transparent white, with large spots of intense crimson; the lip is a clear ivory white, except a slight discoloration at the base. The horns are of great size and strength, and taper into a kind of tendril, besides which they are exactly parallel with the epichilium, the form of which is almost linear, the two edges being as nearly as possible parallel with each other, and not a great deal broader than the column, a mark by which the species is immediately recognised. The present variety is a lovely plant, with large pure white flowers, richly but sparingly spotted with crimson. In the original *S. Martiana* the sepals are straw-coloured, and much more dotted with purple. Messrs. Rollisson have lately flowered it, and believe they obtained it from Mexico. It is as fine a thing as *S. tigrina* would be, if its flowers were white, and is very sweet-scented."—*Bot. Reg.* 44.

NEW OR INTERESTING PLANTS IN FLOWER AT THE PRINCIPAL SUBURBAN NURSERIES.

Bego'nia —— ? A very handsome and valuable species of *Begonia* has flowered for some time past in the stove of Messrs. Young, Epsom, and is the same which we noticed as blooming there last year. It has scarcely any visible stem, and is so compact that the entire plant does not appear to be more than nine inches high. Yet the leaves are large, of a deep green above, and a very rich sanguine hue behind. They are so placed as to present either the front or the back to the beholder, and not to have the surface horizontal. The leaf-stalks are clothed with a quantity of small, soft, whitish scales, something like those of *B. manicata*, but far more irregular and numerous. The flowers are in copious panicles, and are individually large, showy, and of a dark pink hue.

Cycno'ches Egertonia'num. This most curious plant has lately flowered with Messrs. Loddiges, of Hackney, and is so totally distinct from the other species, that it is quite inconceivable how it could have bloomed on the same specimen as *C. ventricosum*, as is supposed to have been the case in the collection of J. Bateman, Esq. It bears a very long slender raceme of flowers, more in the way of *C. maculatum*; but the parts of the flowers are far minuter, with the sepals and petals thrown back, a very singular column, and altogether of a dark pure chocolate colour. It is quite the plant for the lovers of strange things; and is certainly not without beauty.

FU'CHSIAS, *hybrid*. A variety, named Queen Victoria we believe, has been raised by Mr. Smith, of Dalston, and is perhaps the best hybrid that has yet been produced. It appears to have the good dense habit of the old *F. globosa*, though rather more luxuriant, and produces a great profusion of flowers. These are very large, and have pale pinkish-white expansive sepals, with bold open reddish-purple sepals. Another variety, called Stanwelliana, has been obtained by Mr. Low, of Clapton, from Messrs. Purdie and Merrilies, Stanwell Nursery, Leith-walk, near Edinburgh, and is flowering at Clapton, as well as at Mr. Denyer's, Loughborough-road, Brixton. It is a very superior kind, of a neat and excellent habit, with a very pale crimsony calyx, and an unusually large expansive purplish corolla. The latter feature is quite remarkable, and the variety is altogether a very beautiful one.—*F. exoniensis*, a new and large-flowered kind, was figured and described in our September number.—*F. Laneii* maintains its good character; and, for compactness of growth, with profuseness and general showiness of bloom, is a really valuable variety.—*F. magnifica* is about equal to *F. Laneii* in merit. It has short flowers, and the petals are particularly well thrown open.—*F. Grenvilli* and *F. Frostii* come very near the latter, and rank as good second-rate kinds.—Venus Victrix is one of the most peculiar of all the hybrids; and, though the flowers are diminutive, they are extremely pretty. They have a whitish calyx, and a very deep purple corolla. The habit is slender and elegant.—*F. tricolor* is allied to the last. It has a little more pink in the calyx, and the corolla is of a kind of crimson hue. It is a pleasing variation from Venus Victrix.—*F. conspicua arborea* resembles *F. tricolor* in the flowers, the corolla of which is, however, redder. It has a very stiff upright habit, and a great quantity of foliage. It is too inelegant in its mode of growth.—*F. Eppsii* has immense flowers, which want more purple in the corolla. It grows too luxuriantly, and to too great a size.—As a variety more after the old character, *F. formosa elegans*, from its graceful habit, from having the sepals of the calyx reflexed so as to show the corolla well, and from its intensely purple corolla, is one of the sorts most deserving cultivation. What is especially wanted in this tribe, now, is some striking novelty, such as the flowers of *F. corymbiflora*, on a dwarfer and smaller-leaved plant, or having a whitish tube. We have no doubt that this species will be found one of the best parents in producing something strikingly different from the present races.

GESNE'RA CARACCASANA. Introduced from the Caraccas, and flowered by Mr. Mountjoy, of Ealing, while it is now in bloom at Messrs. Young's, Epsom. It is a free-blooming and splendid species, growing from two to three feet in height, with downy foliage, and flowers of the usual scarlet colour, apparently intermediate in form between such species as *G. Cooperi* and *G. rutila*, or *Douglasii*. As it seems to blossom all the summer, it will be a desirable plant for the stove.

GLADI'OLUS GANDIE'NSIS. Of the many admirable Gladioli, this is perhaps one of the most beautiful. It seems to be an hybrid, raised at Ghent; or, at any rate, received from thence into the English nurseries, where, especially in those of Mr. Knight, Chelsea, and Messrs. Rollisson, Tooting, it has blossomed finely, and yet remains in bloom. It has flowers somewhat like those of *G. communis*, though very much larger, with more of an intensely rich crimson in them than of scarlet, and very little of the yellow stripes. Grown either in a large pot or in a southern border, it forms a truly noble object when in flower.

LI'LIUM SPECIO'SUM. An experiment made with this plant at Mr. Knight's, King's Road, Chelsea, has happily proved it to be hardy enough to stand through our winters unsheltered, and only to have its leaves slightly injured by cold winds in the spring. A similar experiment made with *L. speciosum album*, on a large scale, by Mr. Groom, nurseryman, of Clapham Rise, has terminated with the like success; and the plants may now therefore be ranked among our established hardy things. They, with the other variety, have flowered magnificently in the nurseries this year, and we have observed that the flowers possess an aromatic and agreeable fragrance. To cultivate them well, it is quite evident that they must have a very open and turfy soil; such as a light turfy loam, with a good deal of leaf-mould incorporated. A small quantity of decayed manure is also useful. If grown in pots, these should be large; and, draining the soil well, pots of sufficient size should be supplied in the spring, to dispense with shifting, which is difficult, and probably injurious. By keeping them near the glass, when they are in a greenhouse, they will be hindered from becoming so tall, and the specimens will be of more suitable proportions.

OPERATIONS FOR OCTOBER.

The period for the safe housing of all plants that will be prejudiced by cold has now arrived; for it is not wise to risk exposure to casual frost beyond the end of September, as one night of freezing, suddenly experienced, might destroy everything that is tender and unprotected. The direction, of course, includes all the greenhouse plants that are yet out, with due provision for the immediate shelter of those half-hardy kinds, which it is wished to preserve in frames. As to the specimens which need protection in the open ground during winter, it is not at present necessary to prepare for covering them; but the sooner even this matter is attended to, the more secure will they be against any severity that may accidentally arise.

From the late dry and extremely fine weather, an opportunity will have been given for maturing a great number of hard-wooded exotics, both in the stove and greenhouse, by exposing them to the open air; and the same practice may yet be continued in the day-time, by opening the lights of the houses as much as possible, and admitting as much sun and air as can be allowed entrance. It is of the utmost importance to give plants in houses and frames all the exposure which will now be safe; for a few days or weeks of sunny drying weather now will materially influence their state throughout the whole winter, and save much expenditure for fuel, as well as chance of injury.

Those young tender plants for the flower-garden, especially, which are now lodged in frames and pits, should have all the air which can possibly be given them, in order to harden them, to check their growth, and to relieve them of any superfluous succulence. With these, as with many other things, it is a great point to harden them at first, and to prepare them for what may follow; since there can be no question that plants, like animals, are susceptible of habits. It will be well, therefore, to keep them as cold as they will bear to be kept till frost actually sets in.

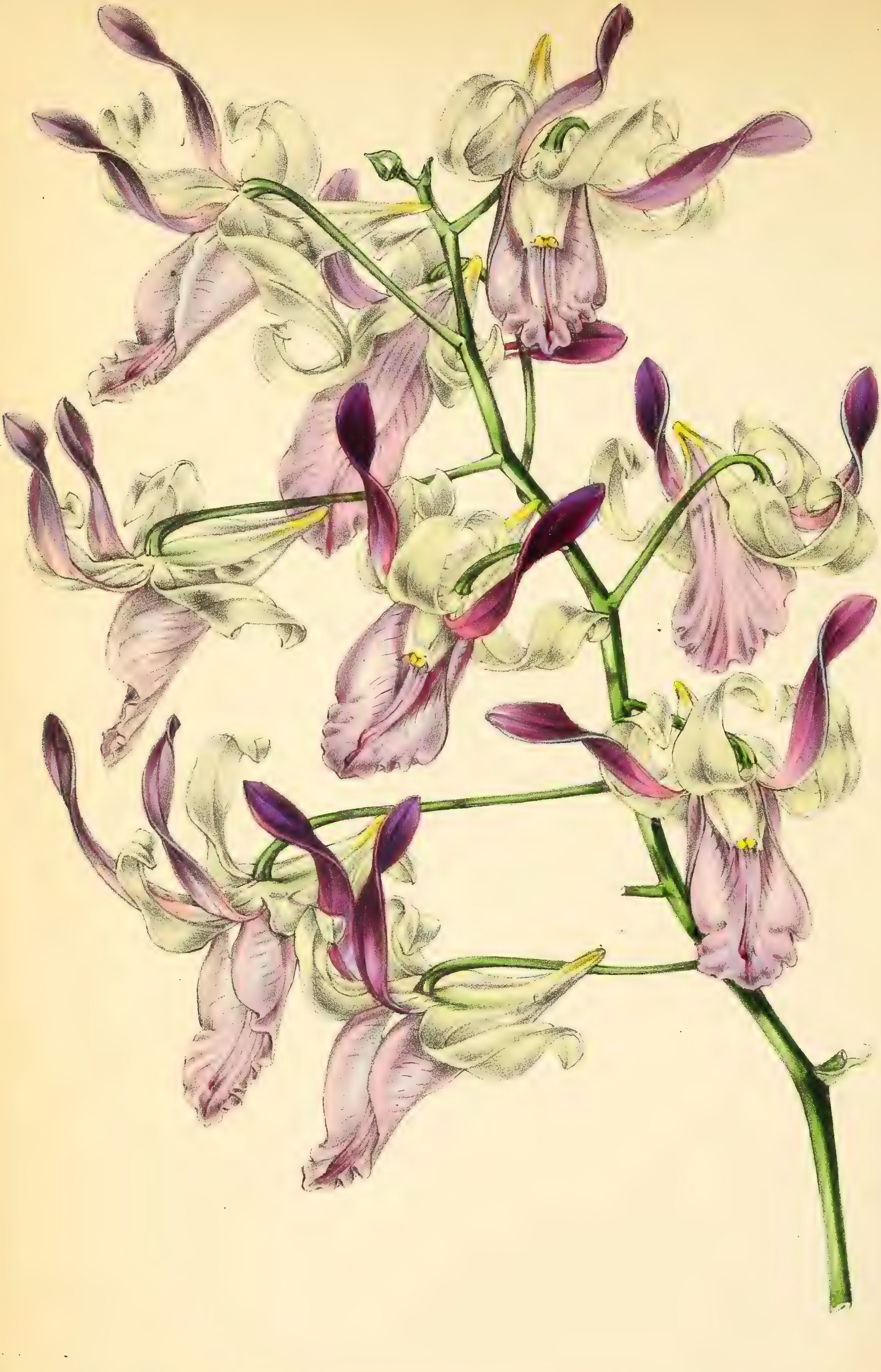
Where plant-houses have been cleaned, and the plants are not yet brought into them, it will be a good plan to give them a little fire-heat, in order to dry them properly, before the plants are introduced; and when the plants are brought in, they should be made to shift with just enough of water to prevent them from flagging. In the administration of water, the cultivator will have the safety of his stock in his own hands for the next two months, and likewise, in great part, all the winter. If very little water be given, very little fire-heat will be required, and the frost will scarcely affect the plants, unless it be very severe. But if water be supplied carelessly, and in the average quantity, there will be great danger from frost. This is particularly true with regard to plants of a soft-wooded or leafy nature.

If half-hardy plants have not previously been propagated, now is the time for putting in the cuttings. They should be planted thickly in pots of moderate size, and put in a rather warm frame, just to induce them to root, when they may at once be transferred to a cold frame or pit for the winter. Any young shoots they may make should be stopped down to within two or three eyes of the stem. Plants of Verbena, &c., that are wanted to bloom early next spring in the greenhouse, should be taken from the ground, cut back, and immediately potted. The roots ought to be as carefully cut as the branches, and not mutilated.

To secure a fine succession of annuals in the flower-garden next spring, and also for the greenhouse, a sowing may yet be made in the open ground for the former, and in pots for the latter. Neither of them should be put in too thickly; and if seed of this year's saving be used, the young plants will speedily be up.

Any alterations that are to be made in the ensuing winter should be forthwith determined upon, ere the trees have lost their foliage. The effect of any change, particularly where trees are at all concerned, can hardly be estimated when the leaves have fallen.

Dahlias, and plants of kindred character, ought not to be taken up till towards the end of the month. Chrysanthemums must be kept duly staked and supported. Trees and shrubs can be moved with safety at the close of October. Plants, in houses, that are not growing well, must have their roots examined, and the soil removed if it be sour, at the same time putting them into smaller pots.



S. Holden delt & Lith.

Dendrobium taurinum.

DENDRÒBIUM TAURÌNUM.

(Bull-headed flowered Dendrobium.)

Class.
GYNANDRIA.

Order.
MONANDRIA.

Natural Order.
ORCHIDÀCEÆ.

Generic Character.—*Sepals* membranaceous, erect or spreading, lateral ones largest, connate with the column at the base. *Petals* often much larger than the sepals, sometimes smaller, always membranaceous. *Labellum* jointed or connate with the foot of the column, always sessile, undivided or three-lobed, commonly membranaceous, sometimes appendiculate. *Column* semi-cylindrical, much prolonged at the base. *Anthers* two-celled. *Pollen-masses* four.

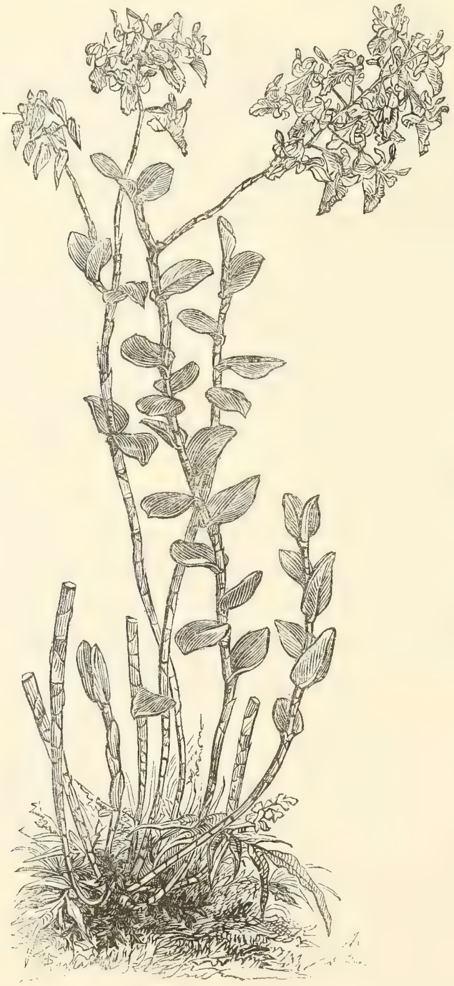
Specific Character.—*Plant* epiphytal. *Stems* cylindrical, very tall. *Leaves* oblong, obliquely emarginate. *Racemes* drooping, many-flowered. *Sepals* ovate, obtuse. *Petals* linear, twisted, twice as long as the sepals. *Labellum* oblong, crisped at the summit, with three elevated lines down the centre, acute.

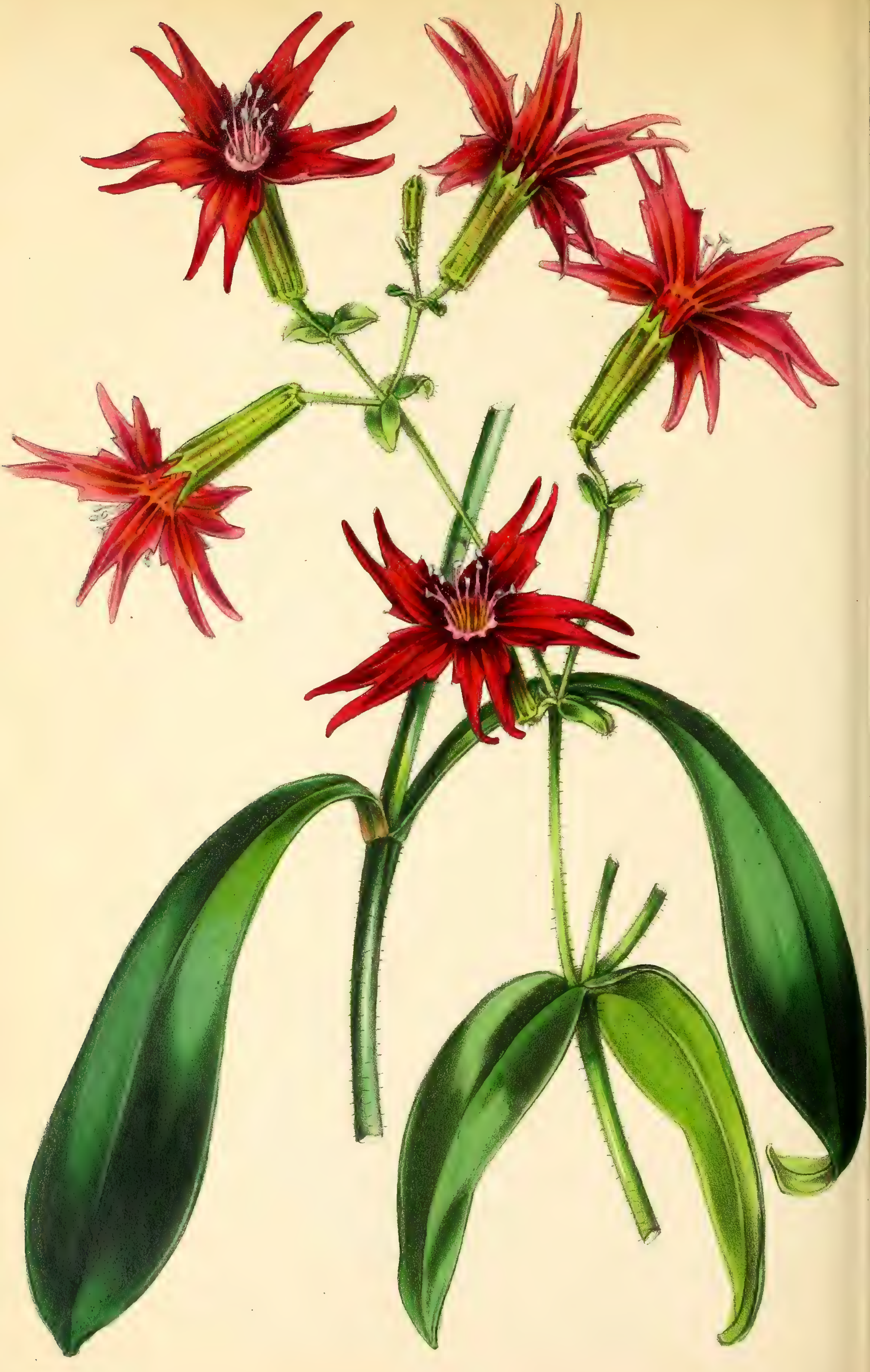
Concerning the extensive group to which this very handsome species belongs, Dr. Lindley says, in the Botanical Register, " whether or not it is possible to divide the great and unnatural genus *Dendrobium* by any really stable characters, is uncertain. It certainly appears to contain several distinct types of structure; but, up to the present time, I have sought in vain for anything sufficiently precise on which to found generic characters.

" Among the sections of the genus no one is better marked than that which consists of species with a stiff erect habit, racemes of flowers placed on a long peduncle opposite the leaves, large showy flowers, and the petals remarkably longer than the sepals. But beyond this, I can find nothing that differs from *Dendrobium;* and as the three first characters are merely of habit, the last can hardly be regarded of enough importance to authorize the establishment of a genus."

This division has been distinguished by Dr. Lindley by the name of the Spatulate section; and within it is comprised the plant before us. *D. taurinum* was imported from Manilla by Messrs. Loddiges, and flowered in the Hackney Nursery last autumn. Mr. Cuming was its discoverer and introducer. Its aspect approximates greatly to that of the curious *D. undulatum.* But though the stems of *D. taurinum* are quite as tall, and the foliage a little similar, the former are not nearly so much swollen towards the base. The flowers are borne in noble racemes near the top of the stems, and a single raceme will have perfect flowers upon it for a month or six weeks. Indeed, the species blooms most immoderately. The flowers are large, of a yellowish green or dull cream colour, beautifully margined and tinted with purplish lilac. The lip, column, and twisted petals, constitute a figure, which has been correctly likened to a bull's head, and from which the specific name has been derived.

It is cultivated, like the larger kinds of Dendrobia, in a moist summer heat, and a drier and cooler winter atmosphere, being potted in a mixture of rough heath-mould and potsherds. Propagation is managed by cutting off one of the stems in the winter, and potting it separately. We annex a wood-cut, exhibiting a portrait of the entire plant.





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Silene speciosa.

SILÈNE SPECIÒSA.

(Showy Catchfly.)

Class.
DECANDRIA.

Order.
TRIGYNIA.

Natural Order.
SILENACEÆ.

Generic Character.—*Calyx* tubular, five-toothed, naked. *Petals* five, bifid, unguiculate, usually crowned in the throat with as many bifid scales. *Stamens* ten. *Styles* three. *Capsules* three-celled at the base, ending in six teeth at the apex.—*Don's Gard. and Botany.*

Specific Character.—*Plant* an evergreen herbaceous perennial. *Stems* about a foot high, hairy. *Leaves* opposite, sessile, long and lanceolate, somewhat obtuse. *Flowers* axillary and terminal. *Calyx* hairy. *Corolla* deep scarlet, with each of the five lobes cut into four others, *viz.*,—two larger ones in the centre, and a small one on either side of these.

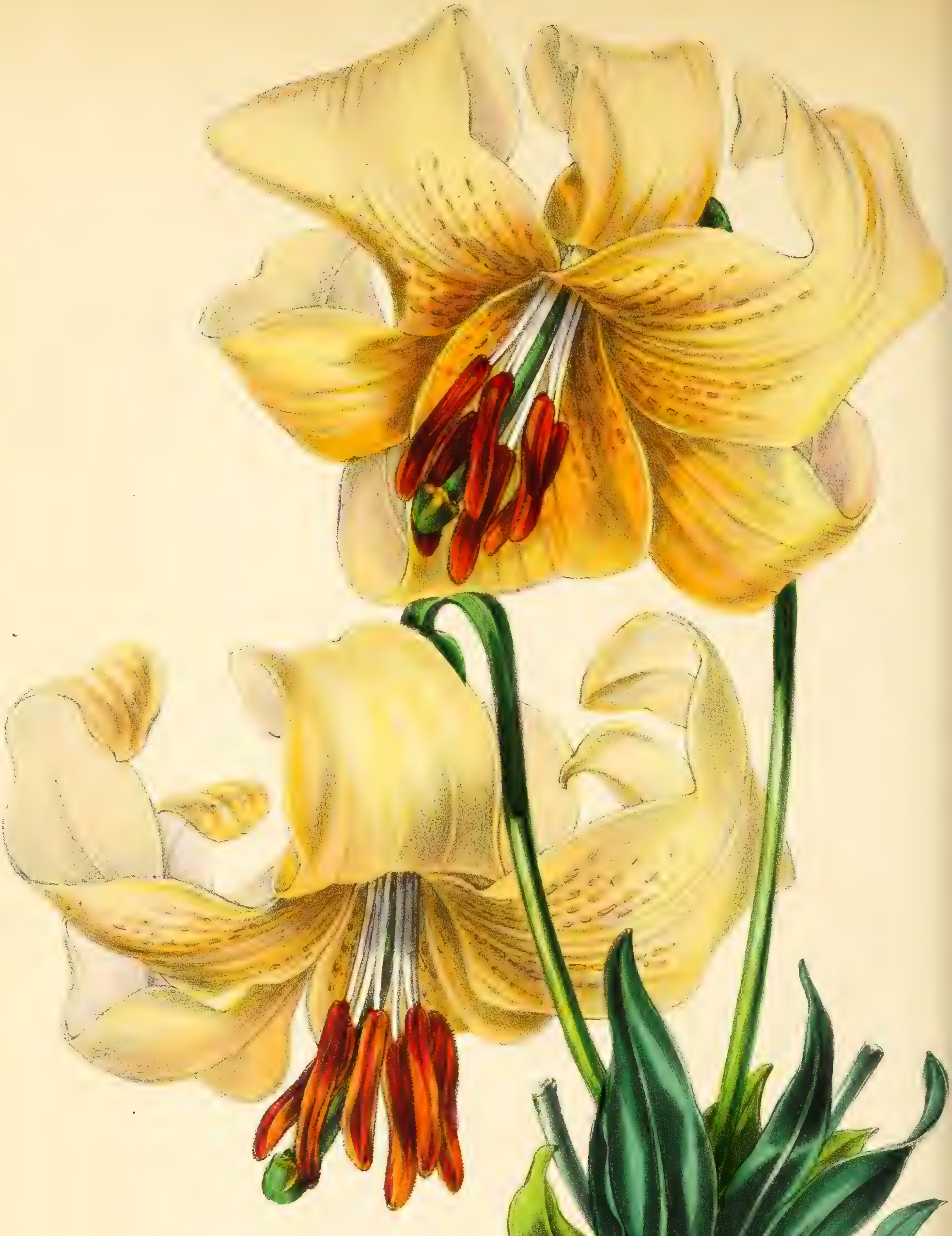
This very beautiful plant appears, at first sight, to be merely a very well-grown specimen of the pretty *S. laciniata*, a species which is now too rarely seen in cultivation, as its numerous flowers look like so many brilliant scarlet stars. When more closely examined, however, it will be seen that *S. speciosa* differs materially in some respects, while its character is altogether better than that of *S. laciniata*, and its flowers have a deeper and more splendid hue.

We have noticed it in several of the London nurseries; but the one from which we procured our figure is that of Mr. Knight, King's Road, Chelsea, where the plant has flowered well all the late summer. As the specimens which have come under our observation have not been finely grown, we may remark, with certainty, that *S. speciosa* is a stronger habited plant, has larger leaves, and finer flowers than *S. laciniata.* The latter, too, instead of having the segments cut into four or more lobes of nearly equal length, have them divided regularly into two larger principal segments, each of which has a very small serrature on the outside, near its base.

How the plant was brought to this country, or from whence it was originally obtained, we have not been informed. It got into the London nurseries through some of the Continental collections.

In respect to culture, it will rank with *S. laciniata* as a tender herbaceous plant, requiring much care to preserve its evergreen foliage from prejudicial dampness throughout the winter. It should be grown in a porous and very fibrous soil, through which water can freely run at any time. Loamy earth is the most appropriate; but a little heath-mould that is full of the small decaying roots of heath or other woody vegetation, may be added. It is a mistake to put much sand in the soil used for such plants as the present; for fine sand, instead of keeping soil very porous and friable, actually helps to consolidate it, as every cultivator may readily determine. Fragments of broken stone are far more proper ingredients, and should be employed freely.

A dry and airy position in a greenhouse will suit this plant extremely well. It will also thrive well in a pit, where it can be planted out, provided it be duly attended to in winter, to keep it from damping off. To bring it to any high degree of perfection, it must have a larger pot than usual, with the soil a little enriched, and the drainage rendered particularly good. It may be increased by division, or by cuttings.



S. Holden, del. & Lith.

Lilium testaceum

LÍLIUM TESTÀCEUM.

(Pale-red-flowered Lily.)

Class.
HEXANDRIA.

Order.
MONOGYNIA.

Natural Order.
LILIÀCEÆ.

Generic Character.—*Inflorescence* mostly pedunculate. *Calyx* wanting. *Corolla* inferior, parted into six petals, turbinately campanulate, erect or drooping: lobes lanceolate, spreading or revolute, with a longitudinal furrow down the centre; naked or ciliated. *Style* club-shaped, with a capitate stigma. *Capsule* cartilaginous, turbinate or oblong, trigonal, three-celled, three-valved, valves having a partition in the middle. *Seeds* numerous, smooth.

Specific Character.—*Plant* a bulbous perennial. *Leaves* scattered, lanceolate. *Flowers* drooping, terminal. *Peduncles* rigid, short *Corolla* with the inner petals slightly warty; outer ones smooth, much longer than the stamens.

Japan, which has already furnished our gardens most richly with showy flowers, through the medium of Dr. Siebold, is said to be the native country of this fine Lily. In point of ornamental character, it is quite worthy of being associated with the other noble kinds from the same region; and, indeed, comes rather near *L. Thunbergianum* or *aurantiacum.* Nothing, however, is positively known regarding its introduction, though it is believed to be one of the many plants collected by Dr. Siebold.

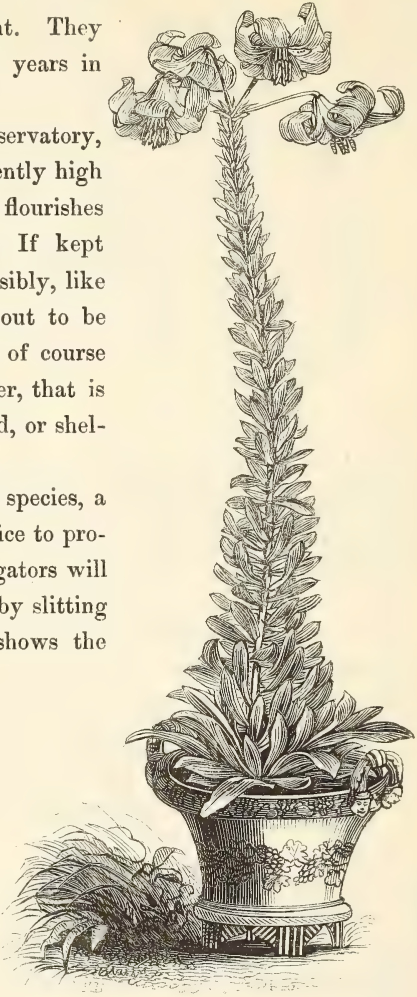
It appears first to have bloomed with Messrs. Rollisson, of Tooting, last season. It was flowered, this year, and exhibited at one of the Horticultural Society's summer shows, by Mr. Mountjoy, nurseryman, of Ealing, Middlesex; and from a very admirable specimen which blossomed at that gentleman's nursery we had our drawing made in June last.

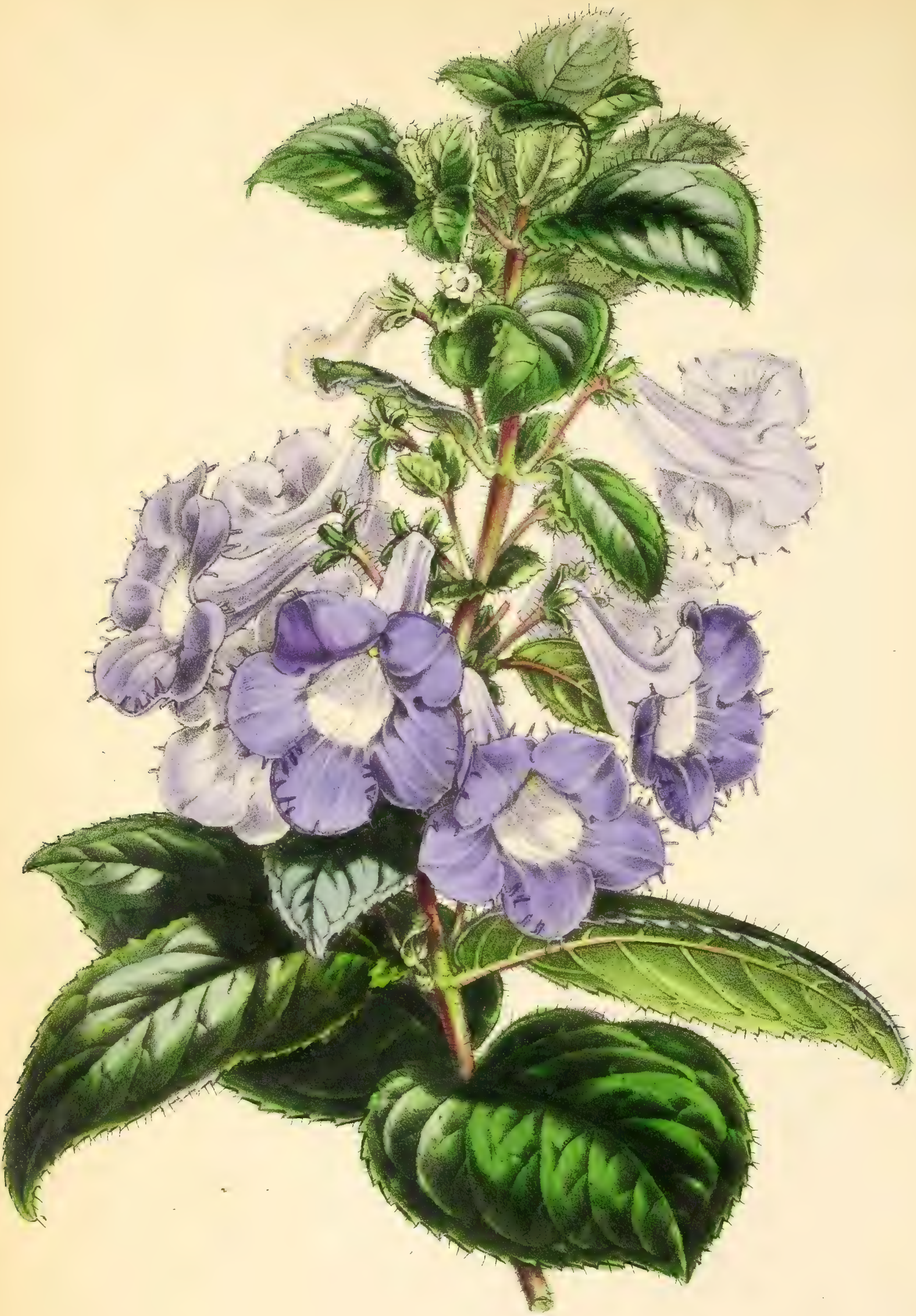
When well cultivated, it grows three feet in height, and upwards, being of a vigorous nature, and bearing as many as a dozen of its large flowers on the same plant. The blossoms are of a pale orange-red hue, with darker warty dots on the inner petals. They are produced in a drooping manner, and the petals are somewhat curled back.

It is really astonishing what a difference variety of treatment makes in this, as well as other Lilies. Properly managed, they are among the noblest flowers we possess. Yet good specimens are far from frequent. The principal thing that they require is a rich, but light soil ; such as an open fresh loam, with a fair proportion of rotten dung incorporated. The latter both enriches the other earth, and serves to keep it light. They should not be grown more than one or two years in the same soil.

For the present species, a low-roofed conservatory, or a cold pit or frame which has a sufficiently high roof, seems to be the best situation, as it flourishes better in a bed or border than in a pot. If kept in a pot, it should have a large one. Possibly, like the varieties of *L. speciosum*, it may turn out to be nearly or wholly hardy ; and then it will of course succeed most perfectly in a prepared border, that is open to the south, and otherwise unprotected, or sheltered only at the back.

In multiplying this and the rest of the species, a single scale, taken from the bulbs, will suffice to produce a young plant ; and some clever propagators will even make four or five plants of each scale, by slitting it into so many pieces. The engraving shows the habit of the plant.





S. Holden, del & Lith.

Achimenes multiflora.

ACHIMÈNES MULTIFLÒRA.

(Many-flowered Achimenes.)

Class.
DIDYNAMIA.

Order.
ANGIOSPERMIA.

Natural Order.
GESNERÀCEÆ.

Generic Character. — See p. 145 of the present Volume.

Specific Character.—*Plant* a tuberous-rooted perennial. *Leaves* opposite, shortly petiolate, ovate, rather coarsely serrate. *Peduncles* axillary, solitary, bracteated, three-flowered. *Calyx* half-superior, five-cleft, the segments broadly linear. *Corolla* nearly two inches long, deep blue within, paler without, especially the tube, which is funnel-shaped, curved downwards, slightly gibbous at the base; limb oblique, of five nearly equal rounded lobes, strongly fimbriated at the margin. *Stamens* didynamous, with the rudiment of a fifth. *Anthers* cordate, united into a cross. *Germen* ovate, the free part hairy, surrounded by an entire annular disk. *Style* about equal in length with the tube. *Stigma* clavate, bifid.

Except the statement respecting its habitude, we have taken the above description from the Botanical Magazine, where the plant is said to be "an annual, according to Mr. Gardner." We learn, however, that it is as much a perennial as *A. longiflora*, or *A. coccinea*, as it has been multiplied as readily as those species by the numerous tubers which it produces from its roots. In this character, therefore, it has proved to be much more valuable than was expected; and, on account of its great beauty, it will most likely soon be as much grown as the now common *A. longiflora.*

Sir W. J. Hooker mentions, in the work previously referred to, that it "inhabits dry banks in woods, in the Serra de Santa Brida, and near Villa de Arayos, in the province of Goyaz, Brazil." The first appearance of its flowers in this country was, we believe, in the Glasgow Botanic Gardens. In the month of June of the present year, it also bloomed abundantly at the Royal Botanic Gardens of Kew. A short time subsequently, it blossomed well in the nursery of Mr. Glendinning, at Turnham Green, and our artist prepared the drawing now given from this place.

Writing to us concerning it, Mr. Glendinning says, that it seems more impatient of moisture than any of the other species; a circumstance which is readily accounted for by reference to its native locality. Keeping this in mind, it should be potted in a particularly well-drained earth, and ought not to have too much pot-room. The common mixture of sandy loam and heath-soil will be sufficient for its culture; but it will succeed better with a trifling addition of duly pulverized leaf-mould. It should have a rather dry place in a warm greenhouse or cool stove, and be kept torpid during winter.

On account of the peculiar colour of its flowers,—which is not a decided blue, but has a considerable dash of pink in it, and approaches to deep lilac,—together with their pleasingly fringed margin, and the profusion in which they are borne, this species is so very distinct that it will assuredly be much sought by the cultivator; and will no doubt be employed by the hybridist in extending that delightful variety in the race which the introductions of the last two or three years have contributed so much to increase.

GARDENING AS A SCIENCE.

No. X.

We recur to the subject of the *Colouring of Flowers*, as the few observations which appeared in the Number of this Magazine of August last, upon the *blue tint* of Hydrangea hortensis, have excited some attention, and particularly in a quarter which claims the earliest notice. In a word, we have been favoured with two communications of a nature so interesting, that we consider it just, not only to the very able and practical cultivator who made them, but to the public, to lay before our readers the substance of the letters, in order to induce experiments, which may bring to issue a question that has been debated during a course of many years.

Before we proceed further, it may be advisable to refer to the authority of Loudon on the introduction and general culture of Hydrangea, as we find them detailed in an early edition of his valuable Encyclopædia of Gardening, page 864, No. 6476; for therein are embodied all that the best authorities had, till then, advanced upon the subject of change of tint.

The native place of the Hydrangea is stated to be unknown—" but it is commonly cultivated in the gardens of China and Japan, whence it was introduced to Kew by Sir J. Banks in 1790." Mr. Loudon thus alludes to what he considered *varieties.* " Soon after it was introduced, some plants were found with blue flowers, which some supposed were produced by salt or saltpetre, and others by oxide of iron. The yellow-loam of Hampstead-heath, and some other places, and some sorts of peat-earth, are found to produce this effect; but the cause is not yet ascertained. Dr. Daalen, of Antwerp, finds that turf-ashes, and still more effectually those of Norway-spruce, the wood generally used for fuel by him, applied to the roots of Hydrangea produced the blue colour of the petals (Short Tour, 122). According to Busch of Petersburgh, the Hydrangea will be turned blue by watering the young plant, the summer before, with alum-water. Our gray-coloured earth, under the black moor-earth, has the same effect, being combined with aluminous salt." (Horticultural Transactions, vol. iv., p. 568).

Upon the foregoing data, most of the speculators in our modern Horticultural publications have rung their changes. Nothing new, in a word, has been adduced —and we may add, that a very early authority, Mr. Hedges, a reputed successful cultivator, observed " If they (Hydrangeas) are expected to blow *blue*, they must be planted in *pure yellow loam.*"

All these methods have been tried, and we remain just as we were; blue flowers have been observed; but they who experimented for themselves, have almost invariably met with disappointment.

Here we arrive at the point at which we started, when we wrote the few remarks that appeared in August, and which elicited the observations we now refer to.

Our correspondent tells us that he constantly has grown great numbers of the Hydrangea in Italy, with both *pink and blue* flowers, as they are particularly well adapted to ornament the internal courts of houses *where the sun never reaches.*

We stop here to notice the effect of shade, for we recollect to have once been told by a nurseryman, that he had known blue heads of flowers to have been produced with pink heads upon the same plants, and at the same time, by entirely excluding the sun from the former. We attach little faith to the assertion; but it is unquestionably true that shading is an indispensable condition, whenever it is an object to preserve the bloom in perfection.

After having tried different agents to induce the blue colour, we are told that "pure iron filings, mixed with the compost in which the plants grew, were found most effectual; but considering that the finer the iron the greater in all probability would be its activity, from the more intimate admixture of the particles with the various constituents of the compost, the fine *sandy substance* that is found under the stone wheels of the knife-grinders was substituted for common iron-filings, and with such success, that plants treated with the grinder's dust, gave blue flowers for three successive years without requiring any additional supply, though the intensity of the blue tint was greatest during the first two years."

Such was the substance of the first communication; and it appeared so striking, that we became desirous to ascertain, as correctly as possible, the nature of the *compost* with which iron-filings in the first instance, and grinder's dust, subsequently, had been blended.

We were speedily favoured with a reply to our application, the substance of which is now given almost verbatim in the writer's own words:—

"The nature of the compost employed by me cannot be given with very great exactness, as Italian gardeners are not nice enough to mix their ingredients by measurement; but I think that I am not very far from the truth, when I thus describe the compost.

"Common mould, such as would be used for geraniums, *four parts;* rotten chesnut-wood, *three parts;* and grinder's dust, *four parts.* A good substitute for rotten chesnut-wood, might be *fibrous peat*, such as is used for *Orchidaceæ.*

"How the iron acts in the economy of the Hydrangea, man may never be able to discover, as Nature veils her laboratory too closely from human eyes! Bog-earth might influence the colour of Hydrangea hortensis, through the iron, or perhaps the *tannin*, of which it contains so much."

By the term bog-earth, our correspondent evidently intends to express the *peat of turbaries*, a substance not at all resembling the heath-soil so erroneously called peat by our modern writers. Newbury-peat was analysed by Davy; and other substances from the peat-mosses have subsequently been investigated, and their constituents accurately detailed; but few persons will meet with such, and, therefore, we must confine our remaining observations to the operation of the iron referred to in the foregoing quotations.

In the first place, whether the Italian compost be rigidly followed, or fibrous heath-mould, leaf-soil, decayed cow-manure, &c. &c., be substituted; certain it is that the iron filings, however introduced, could not act directly upon the organism of the roots; but would be gradually converted to an *oxide*, by the decomposition of water—directly, or secondarily, by that of the vegetable matter contained in the compost. In either case, we do not expect that any of the iron would be dissolved and conveyed through the sap vessels into the floral organs; unless, indeed, some vegetable acid were produced capable of acting upon the iron at the moment of its oxidation, and thus forming a soluble chalybeate salt.

To ascertain with any kind of precision the operation of the iron, it would be needful strictly to analyze the earth prior to the addition of the iron, and thus to note the quantity of iron already present in it. Then to mix a given weight of filings with any required quantity of soil or compost, and set the mixture aside in a garden-pot, keeping it just so moist with rain-water, as would enable a plant to grow and thrive, and placing by its side another pot of the same soil containing a young Hydrangea, just raised from a cutting.

If the blue tint were obtained in the first head of flowers, a small portion of the soil should be taken from the immediate vicinity of the roots, and a similar portion from the centre of the pot without any plant. Both portions being dried at the heat of boiling water, an equal quantity (say one drachm of each) should be accurately weighed, and minutely analyzed, so as to determine the quantity and precise condition of the iron. The result, though it might not prove demonstrative, would, we apprehend, lead to a shrewd conjecture how far the iron had acted as a primary or secondary agent.

There can be no doubt that, in either case, the filings would be converted to rust, or oxide of iron; but were the soil in which the plant had grown, found by comparison to contain a diminished proportion of iron, it might be inferred that the plant had absorbed a certain quantity, which being laborated in appropriate vessels, had thus become the direct agent in effecting the change of colour.

The extraordinary change of colour effected in the foliage of many plants by the free use of leaf-mould, leads to the inference, that by the decomposition of vegetable matter certain *hydro-carbons* are produced, which are taken up by the absorbents of the roots. But *iron*, however fine its particles, cannot be absorbed; therefore, the filings or dust must of necessity be so changed as to become soluble; or, by attracting oxygen from the moisture of the soil, and also from the decomposing leafy remains, to be converted into an *oxide*. In the former case, a salt of iron, soluble in water, may combine with the crude sap; but in the latter, the iron will remain, as rust, in the body of the soil. Yet, though inactive in itself, the new products, or some one of them, resulting from combinations of the elements of the leaf-soil, will become the colouring agent.

The infinite play of affinities between oxygen, hydrogen, and carbon, when excited by galvanic electricity, must induce phenomena altogether beyond the ken of man's contemplative faculties. Yet, while we remain ignorant of the minutiæ, we arrive at general facts, when once we attain assurance that particular effect is produced by the application of any known agents.

Thus, let the fact of a change of pink to blue by the agency of iron dust, be once established, and we shall be at no loss to determine whether the action be direct, or secondary.

ECONOMY IN FLORICULTURE.

When we previously wrote on this subject, we laid as the basis of our remarks certain fixed principles by which it might be known what true economy is, or at least, what we mean when using that phrase. As the matter must necessarily have an interest for all classes of readers, however varied may be their tastes, or whatever may be the branch of this art to which they devote themselves, we here resume its consideration; still adhering to the maxims just alluded to, and which comprise the position, that the cheapest way of doing a thing is that which accomplishes it in the best possible style, and at the least final and general expense.

Having already touched upon that extravagance which uses costly houses to preserve and grow plants in, when frames would answer the purpose much better, and also the waste of heat, labour, &c., incurred by growing plants in greenhouses which might be employed in decorating the open beds and borders during summer, and stored away in cold pits for the winter, we shall speak of that far greater, more expensive, and more common evil, which is occasioned by the use of fire-heat in houses of various characters, when there is not only no necessity for it, but when it is absolutely harming the plants subjected to it.

From the commencement of this Magazine, an endeavour has been made in it—and that strenuously and frequently—to cry down and eradicate this monster extravagance. The like effort has been repeatedly made in other publications. Apparently, however, all arguments have been of little avail; for it is practised in many places almost as untiringly as ever, and, in most, to a degree which no existing circumstances warrant. Nevertheless, we are happy to find that a better knowledge of the subject is prevailing; and that an advance is in progress, though slowly, towards a more philosophical and desirable state of things.

Unhappily, there is a tendency, in the majority of cultivators, to be over-careful of every rare plant, and to give it more heat than will be of service to it. This is also the case with regard to whole tribes, as well as individual species. A large proportion of the Orchidaceæ are proofs of that proposition. Until very lately, and even now among a considerable mass of those who delight in flowers, this lovely tribe was deemed unattainable by any, save those who have the means of heating highly an appropriate stove; whereas it is a fact, with which not a few are practically familiar, that a quantity of the loveliest of them succeed in a greenhouse. Nor do they but barely exist in such a place. They actually flourish *much better* there than they would do in a stove.

No one, then, who can command a pit or frame capable of being kept close occasionally, and of being securely preserved from frost in winter, need forego the pleasure of cultivating a few fine Orchidaceæ on account of the expense they create in the purchase of fuel, for, except so much as all greenhouse plants demand, the particular sorts to which we refer do not require artificial heat; and, for the convenience of viewing them while in flower, they might easily be suspended in a drawing-room, or introduced in ornamental wicker or other wooden baskets, raised on pedestals.

It would be worth some little effort to describe minutely how Orchidaceæ could be managed in this way, and point out the sorts which would bear that treatment; but, as the matter is rather foreign to our present topic, or would carry us too much into detail, we shall only now hint at the plan, as one likely to economize fire-heat.

In a far more comprehensive sense would we now wish to treat of the wasteful consumption of fuel in cultivating exotic plants. There is hardly a greenhouse or stove throughout the kingdom, which is not unnecessarily heated at some period. And as this superfluous temperature tells most injuriously on those plants, an additional motive is thus supplied for withholding it.

Into the process by which plants are rendered sufferers beneath an immoderate or improper power of artificial heat, we have so often entered, that it cannot be desirable to repeat the particulars. They are, under the influence of undue heat, induced to grow too fast, or at an unfit season; and, being materially weakened thereby, fulfil all their highest functions imperfectly.

But the worst feature in the ordinary system of administering an unnatural temperature is, that it is given precisely at that time when plants require to be left to themselves, and to the enjoyment of a state of torpidity. They consequently expend the matter which they had secreted and stored up for another season's production, in a worse than useless extension of their shoots; and hence, every unnecessary degree of heat in winter, trenches on the inflorescence and robust growth of the following summer.

At the foundation, however, of all this waste and this detriment, is an evil in general treatment, in the removal of which must of course lie the destruction of the practice we condemn. It is of no use urging on cultivators that fire-heat is both wasteful and prejudicial in most of the instances where it is employed, unless they are likewise informed how they are to proceed in order to dispense with it. Without a suitable preparation of the plants, they *must* use more of it than would otherwise be wanted. And we will therefore here go to the root of the whole question, and lay bare those radical defects in plant management generally, which lead to the breach of economy now beneath our notice.

What principally causes fires to be set in operation so much during the winter months, is that deficiency of ripeness in the shoots of plants, and that want of hardihood, which attention to their summer and autumnal growth has failed to supply. In the first place, house plants are allowed to begin growing too early in the spring. The first burst of warm sunshine, even if it come early in February, is permitted to act upon them with full force, and they consequently commence expending their young developments before the natural warmth of the season has become sufficiently confirmed to continue those developments in a healthy condition. The remedy for this is by no means difficult. If, on the casual occurrence of such externally genial weather at an unsuitable season, the houses were all thrown open, and the temperature reduced to the lowest possible degree, there would be no immediate effect on the plants, and their energies would remain latent till a more propitious time; when, on being at length unfolded, they would exhibit a high amount of vigour. It is this vigour—this strength of constitution and habit—which constitutes the real safeguard against cold, and the true means of economizing heat.

The second reason why heat has to be uselessly expended in winter is, that plants are kept too cold through the spring and early summer months. In April, May, June, and the beginning of July—the period when every appliance which could at all promote their growth and maturation, should be brought to bear upon them—they are nearly everywhere exposed to as much dry air as can well be admitted, and the very circumstances which would be most congenial and proper, repressed with a care and an assiduity worthy of a better system. Thus, when heat and a close atmosphere are really needed, and when they can be had by Nature's aid, they are discarded as much as practicable, and furnished, by expensive artificial means, at a period when they are hardly at all wanted, and are actually productive of harm. So inconsistent is a great proportion of our cultivators!

That plan for the spring and summer management of plants in houses, which best consults the habits and health of those plants, and which makes them of themselves economizers of fuel in winter, is the one which, profiting by what Nature teaches, and by the assistance she spontaneously yields as soon as vegetation develops its flowers, keeps them close and warm at that period, thus helping them to expand their energies freely, and to lay in stores for future action. Having also, in this way, brought their growth to perfection in point of size and strength, a continuance of the same means is provided for, to take them through the first of the autumn months, and mature and harden the growth already formed. Six weeks or two months of subsequent exposure, either entire or partial, according to the nature of the plant, will then finish that maturation, and confer a degree of hardihood, which will withstand a degree of cold scarcely above freezing, and even, in many cases, three or four degrees of frost itself; such cold being, moreover, so far from doing them harm, that it is the most friendly influence they can receive, because it retains them in a state of rest.

Another mode in which heat gets superfluously consumed in winter is by the ill regulation—or rather, the total want of regulation—of the supply of water to plants in houses at different periods. At that part of the year when, as we have said, vegetation asks more heat than it usually gets where man can control it, a greater amount of moisture is also called for. There is rarely, indeed, any lack of this, as far as the roots of the plants are the receivers; but far more is demanded in the atmosphere of all kinds of houses while plants are growing than is ordinarily given. A moist, close air, is of vital consequence to plants while they are forming their young parts; and its adequate supply at that time will materially affect their capacity for thriving without winter heat.

As autumn draws on again, considerably less moisture—both to the roots and in the air—is needed for plants; and this fact is of yet more moment in relation to their winter temperature. Moreover, still farther on in the season, and from the end of October to the middle of March, their wants of a fluid character have scarcely an existence. They delight in comparative dryness, which promotes their torpidity, and enables them to elaborate the juices they had previously imbibed and formed. It is in this part of the treatment of exotics with respect to water that cultivators are most seriously wrong or careless in practice.

The difference between a plant in winter and one in spring, with regard to the food it requires, is similar to that between a human being kept constantly in a state of inertness and repose, and one in the full exercise of every physical power. To feed the one to anything like the same extent as the other, would certainly engender disease.

In winter, a plant merely lives. In spring, it lives and *grows*. It is the latter function for which so much fluid is demanded; while, for the maintenance of mere life, a very small quantity suffices.

Since it is chiefly to dissipate accumulated moisture that any extra heat is to be desired in winter, it follows that, where fluids have only been given sparingly, and as a matter of necessity, through the autumn, and where they are hardly at all furnished, from the close of that season till the arrival of spring, one of the main excuses for artificial heat is entirely cut off. And hence, it is in the power of every culturist to save much fuel annually by attention—sedulous attention—to this trifling circumstance.

Various minor points in the routine of exotic cultivation contribute to augment or diminish the quantity of heat which must be kept up in winter. Wherever, from unavoidable external conditions, a plant grows unnecessarily, and for the second time, in the autumn,—and this is a case which will be frequent with the best practitioners,—the amount of moisture in the house where many such plants are kept will be sensibly altered, according as young growth of that character is cut off or suffered to remain; and, as before asserted, the temperature will have to be determined by the hygrometric state of the atmosphere. To remove all autumn-formed shoots, therefore, or to prune them down to within two or three eyes of the base as soon as they are fairly developed, is evidently the safest, and wisest, and most economical course.

From inefficient drainage, or an accidental stoppage in the flow of water through a pot in which any plant is growing, there may be a stagnation of water in that pot, and thus, by a multiplicity of such cases, another occasion for artificial heat will arise. This must be avoided by going over the whole collection carefully before the beginning of winter, and re-potting whatever specimens may be so situated.

Other contributors of moisture—and therefore of a demand for additional heat—may be the materials within a house. The soil beneath a stage, for example, may get saturated with moisture during summer and autumn, and be constantly giving this off to the air throughout the winter. The sashes, too, may be leaky, and so admit moisture through the roof. There may be tanks or vases filled with water, and exposed to the atmosphere of the house, towards keeping which moist they will be perpetually contributing. All these things, and others of a similar nature, are very small and uninfluential when considered separately. But they all have an effect: and when several are acting together, that effect will quite turn the scale sufficiently to render fire-heat indispensable. Such being their tendency, they should of course be looked to, and their influence cut off by taking away its cause.

Thus have we specified some of the particulars which, in cultivation, determine the degree of heat requisite to be kept in houses through the winter. We seek, above all things, here to impress on the grower of exotics that, to do away with fire-heat, except in extreme cases, he must pursue a preparatory system throughout the entire year. It is not keeping the plants dry in the autumn alone—nor simply a carefulness to mature their growth in summer—nor merely the regulation of their supply of fluids at any or all seasons—nor always having the houses dry during winter — nor, in short, any one or two of these or other agencies, however potent, which will realize the desired end. It must be by a concurrent attention to them *all*, and a conjoint working out of the *whole.*

In addition to the methods of producing a saving in fuel already mentioned, there are one or two further suggestions which we desire to record. The leading one is, that the use of fire-heat propagates itself, and is thus doubly pernicious. In other language, when fires have once been employed, they become, from that occasion, increasedly needful; and the subsequent frequency of their use renders that use always still more frequent. It will be a rule of sound economy, then, to go without them as much and as long as possible. Provided no frost enters a house, cold will only harden and improve most plants; and a thick or close covering to a roof, applied during the first winter frosts, will sometimes save a whole collection of plants from acquiring that tenderness which results from the stimulus of fire-heat, and from which only the warmth of spring will again restore them.

A further rule in putting on fire-heat to a house, is to have the apparatus always ready for working, and not to get up the temperature so suddenly, nor to so great a height, as is often done in urgent circumstances. A violent transition from cold to extreme heat is exceedingly injurious.

Some of the modern modes of heating consist of open gutters in the house, along which the water that is to warm it flows. It is hardly necessary to say that, unless some provision exist in them for covering in the water-channels at pleasure, the employment of these in winter violates all our principles of genuine economy, as respects both the amount of fuel demanded, and the effect on the plants.

The last, and undoubtedly not the least efficient plan of economizing fire-heat, to which we intend now adverting, is by putting on an outside covering to the glazed portion of a structure. With something of this kind that is really effectual, fires will be altogether needless in greenhouses, and the expense of even an heating apparatus will be saved. Considering the great economy and advantage of the plan, it is singular that so few have adopted it. For pits, particularly, it would be peculiarly adapted, on account of the greater facility of applying it. Surely a little of the ingenuity that is bestowed on less important objects might devise a material which would possess none of the objectionable features of those hitherto used. Their great fault is, that they are too cumbrous. It appears to us that something in the way of the oiled canvass or calico at present substituted for glass in garden frames, might be found, when rightly elevated above the glass, to exclude an immense deal of cold.

We fear that we shall expose ourselves to the charge of having over-estimated the interest of our subject, by the length to which we have pursued it. It is alone, however, as we conceive, by tracking out an inquiry in all its ramifications, and, by fixing on one main point, concentrating every variety of evidence and argument in the establishment of that, that any decided advance can be made in the propagation of correct principles. We will only add, that though we do not, without some modification, include stove plants in the remarks we have made, we yet believe that, in winter, they need very little beyond shelter; and that the current system of maintaining the stove always warm is totally erroneous, adverse to the well-being of the plants, and destructive of the fundamental principles of economy.

TRAILING PLANTS, AND THEIR CULTURE.

It is a very convenient and useful mode of arranging the vegetable kingdom, for the purposes of cultivation, to divide it into great classes, according to fixed and prominent peculiarities of habit. Such a method, however, is too little practised; and hence, when any kind of plant is wanted for a particular object, or when a tribe of plants of a certain sort is wished to be grown or studied, the inquirer finds very little to assist or guide him in existing publications.

With the exception, perhaps, of climbers, distinctions in classification relative to habitude are seldom recognised. We therefore here desire to bring before our readers a group of plants which, though scarcely known to exist as a separate class, comprises a good many species, and includes objects of a very interesting character.

Trailing plants are those whose stems spread horizontally and along the surface of the ground, only the points of the shoots ever curving upwards. They are also frequently called creepers. Many species that now rank as climbers might be appropriately ranged under this head; for although, by attention, they are induced to ascend, and to climb a greater or lesser height, they would, if left unheeded, creep along the earth, and lie completely prostrate. It is obvious, then, that numbers of climbers might be brought beneath the same treatment as trailers; but we would restrict the latter term to those dwarfer species which can be most fitly managed as real trailers.

From their very humble nature, and their disposition to keep close to the ground, they appear to have been placed likewise in a low position as respects the amount of attention awarded them. Nevertheless, they have almost as strong claims to notice as climbers; and we have more than once striven to show that these last are among the most pleasing things in the whole vegetable world. They have the same slenderness and gracefulness of growth; and if these are not displayed so effectively, we hope to be able to make good the statement, that this is owing to their unfavourable and unsuitable treatment, and not to anything which they themselves lack.

They comprehend a considerable variety of plants; some being shrubby and some herbaceous, while a few are merely annual; and many being tender enough to require a greenhouse, others half-hardy, and the rest capable of thriving in an entirely unprotected place.

They are also adapted for various uses. In a common border or an ordinary pot, they make a pretty appearance. On rock-work, or spreading over sloping banks, or planted in the hollow of a rough piece of rock, and hanging over its edges, or mantling its surface, they are extremely interesting. Suspended in pots to the roof of a greenhouse, or the ceiling of a drawing-room in front of the window, they will have a delightful effect; and be similarly attractive when placed on pedestals, in the like situations, where their drooping branches may surround the pot, and be fully exposed to view. Planted along the margin of a walk in a conservatory or stove, or on the top of the wall surrounding a pit, or other elevation in a similar structure, or to form a kind of natural undergrowth in a stove which has beds in it for containing tropical plants and for growing them in a jungle-like manner, they are still more desirable. Another excellent office which they would fulfil is to compose an edging to flower-borders, or a broad formal band of flowers, within an edging of turf, or a spreading and lively covering to the ground beneath the plantations.

While the best of all uses to which they can be put, is, in our opinion, the decoration of rustic baskets, vases, pieces of the trunks of trees scooped out so as to form a basin in the centre, and this basin filled with soil and trailing plants, or raised beds, bordered by piles of wood in a rustic manner, or, in fact, anywhere or in anything that is not too formal, where their branches will depend over the sides of some object, and be kept from touching the ground, and apparently mingling with the soil.

Of the mode of suspending trailing or half-climbing plants in pots or baskets, in order to give variety and liveliness to the greenhouse and the stove, we have spoken, not long since, at considerable length, and need not now recur to the subject, save to observe that, while we then pressed the propriety of the practice on account of improving the aspect of plant-houses, and rendering them more diversified and gay, we would here advocate it for its exact suitability to the nature and peculiar habits of the plants. The beauty of a trailer is entirely lost when it is standing amongst a general collection, even though it should be placed on a raised stage or shelf, and quite in the front of it. Its elegance and symmetry can only be shown by suspension. Of course there are a multitude of dwarf climbers, which, as we affirmed in the article above referred to, are equally or better suited for suspension in this way; but we shall not be far wrong in considering such species as genuine trailers.

In cultivating trailing plants on plain flower borders, it should be the endeavour of the grower to raise each specimen on a little mound, formed of turfy earth, and about a foot square (more or less), according to the extent of ground which the species is adapted to cover. This mound may be about three, four, or six inches above the usual level, and just so large that the shoots of the plants may hang down over its edges, and show the true character of the specimen; otherwise it will have the tame, commonplace appearance of an ordinary herbaceous plant.

When trailers are planted on rock-work—a system of treatment which is eminently appropriate—they are generally put in crevices or hollows, which require all their growth to fill them, and the interest of the plants is thus hidden. Instead of this, they ought to be set in places where the soil can be made up nearly level with the rock, so that the very earliest extension of the shoots may be over that rock. Nothing is more charming than nice healthy shoots, clothed with inflorescence, lying over a rocky surface; and without some such contrivance as we have hinted at, this beauty cannot be attained.

But trailing plants may be put on rocks in another and more interesting way. In places where stone is abundant, plenty of rough pieces are mostly to be met with, having a depression or hollow on one side; and if some kinds of trailers are furnished with a little earth in such a position, they will soon establish themselves, and flourish remarkably well. This is the case with several of the Sedums, and with the pretty wild Thyme.

Where small banks of earth exist on the sides of mounds, or on natural slopes, and it is desirable to cultivate them as flower-borders, trailing plants will be found particularly suitable. The smaller or stronger sorts can be employed, as the occasion may demand. In these instances, as well as on common borders, where the mounds we have described cannot be made, it will be advisable to put a few loose stones over the surface of the soil. These will support the stems and branches of the plants, and hold them up more prominently to the eye.

In conservatories which have the plants arranged in beds, and planted out therein, and in other houses that are furnished with raised pits, there is commonly a great baldness and nakedness about the sides of the walks, and an evident want of some lively edging. This might be readily supplied by a row of small trailers, planted in a gutter on the top of the wall, or just within the wall in the one case, and also by a border of trailers immediately within the curb-stone or artificial edging in the other.

We have seen numerous plants growing wild on the old walls about pleasure-grounds, and contributing materially to take off their stiffness. We have likewise observed plants cultivated on the top of walls in some places, in order to take off the extreme straightness and regularity of their upper outline. But nothing would be so suitable nor so pretty in such circumstances as trailers. Even Ivy planted in a gutter on the top of a wall, and made to form a kind of verdant crown to it, bringing it no lower than about two or three feet from the summit, would greatly relieve its formality.

As edgings to flower-borders, where box or grass cannot easily be had, or would not be so desirable, trailers answer admirably, because their growth is mostly regular, abundant, and capable of being trimmed to any extent. They are valuable, moreover, for placing inside (about six or nine inches from) a margin of turf to a flower-border ; composing a band, which harmonizes well with the grass verge.

We have hinted, however, that we deem them most worthy of being made use of for filling (or planting round the edges of) rustic baskets, vases, &c. In the modern style of flower-gardening, there is ordinarily a flatness, and consequent dullness or monotony about the beds, which offends the lover of picturesqueness. To remove or vary this, a few of the principal beds should be formed into raised baskets, the sides being composed of rough pieces of wood, with the bark uninjured. Or, where the beds are large enough, a portion of the centre of the most conspicuous and the largest should be so appropriated. It is over the edges of these that trailers would show themselves to the greatest advantage. And the same objects would likewise make agreeable features on lawns. They are, we know, much employed in the latter localities : but it is the use of trailers for them to which we now call attention. In more than one place, too, we have noticed retired parts of the pleasure-grounds set apart to groups of rude vases, baskets, and heaps, made of old lumps of the branches, trunks, or roots of trees ; and for covering these, or depending over their sides, trailers would be exceedingly serviceable.

Did our limits admit of such an introduction, we might supply a copious list of the most interesting among trailing plants. Having indicated their nature, however, we are compelled to refer to catalogues, where they are either described as trailing or creeping plants. As a better clew to their habits, it may suffice to say, that of hardy shrubs, the common Ivy, the Periwinkles, the *Cotoneaster microphylla*, most of the Rock Roses and Sun Roses, and the *Daphne cneorum*, are excellent trailers; while the more herbaceous species include most of the Sedums, many of the Verbenas, some of the Lobelias, several species of *Alyssum*, *Draba*, and *Aubrietia*, and those beautiful moss-like Lycopodiums, whose soft verdure constitutes such a lovely feature in the moister and shadier parts of conservatories and stoves.

We must not fail to note that there are many trailers indigenous to Britain, which, like other native plants, deserve a far more extensive cultivation than they have yet received.

FLORICULTURAL NOTICES.

NEW OR BEAUTIFUL PLANTS FIGURED IN THE LEADING BOTANICAL PERIODICALS FOR OCTOBER.

CANDO'LLEA TETRA'NDRA. "The plant which is called *Candollea cuneiformis* in gardens, is a species with leaves and flowers not having the size of the present subject, and stamens placed from six to nine in a parcel; otherwise it has much the same appearance. This species is manifestly quite distinct. The former comes, or is said to come, from King George's Sound; this has been raised from Swan River seeds. In country, therefore, they are not very different. It is remarkable for the large size and orange colour of the aril of its seeds. In a small way, this organ is like that of the nutmeg, and will represent the nature of the mace in that spice. It is a greenhouse plant, and will grow freely in almost any sort of soil; but it appears to thrive best in a compost consisting of peat, loam, and sand in equal proportions. It will bloom freely in a pot; but, where that can be accomplished, it will do much better planted out in a bed. Whether potted or planted out, the neck of the plant (that portion of the stem immediately above the soil) should be a little elevated, otherwise it is liable to suffer from damp in winter. Water should be liberally given during the summer months, and plenty of air at all times when the weather permits, applying no fire-heat, except to keep off frost. It is easily propagated by cuttings, under ordinary treatment." *Bot. Reg.* 50.

CIRRHOPE'TALUM CHINE'NSE. A singular and beautiful little object, having a circlet of its pretty flowers surmounting a stout stem of about three inches in height. Each flower has two long tongue-shaped petals, depending like lappets from its sides, and being apparently of a pinkish cream colour. The hue of the other parts of the flowers appears to be a deep crimson. Nothing can be more interesting than the species of *Cirrhopetalum* grown of blocks of wood, and bearing their elegant heads of feathery blossoms. The present one is a native of China. *Bot. Reg.* 49.

DENDRO'BIUM A'QUEUM. "Among the crowd of Indian species belonging to this large genus, or group of genera, the plant figured seems to be hitherto unknown to the botanists of India. With the manner of growth of *D. Pierardii*, its pale watery green flowers are quite destitute of the attractive colours of that gay species, and are entirely different in the structure of the lip, which is furnished with a large cavity, almost a pouch, at the base of the middle lobe. It is also a much stouter plant, with wavy leaves." Messrs. Loddiges imported it from Bombay, and flowered it in November, 1842. It "may be grown in the same way as many other Dendrobiums, potted in rough turfy peat, well mixed with pieces of broken pots. For drainage, the pot should be nearly half filled with potsherds, and the soil elevated one-fourth the height of the pot above its brim. Being thus potted, too much water can scarcely be given during the growing season. The house should be slightly shaded in sunny weather, taking care to keep the temperature as near 80° as possible, and about 68° by night. In autumn, as the young shoots become matured, water should gradually be withheld, so that, in winter, the plant may only receive it in fine weather. The temperature may then be allowed to fall as low as 50° or 55°." *Bot. Reg.* 54.

Elea'gnus parvifo'lia. "Making allowance for the effects of climate, we may identify this plant with the *Eleagnus parvifolia* of Wallich and Royle, a shrub from the north of India, of which abundant specimens were distributed by the former botanist. They are more gray, indeed, and their silvery scales are more abundant, but this is a mere difference in degree. Indeed, the Sirmore specimens, from the collections of Webb and Gerard, are as green as our own. The Kamoon specimens are more loaded with flowers, which appear, moreover, in short dense corymbs, and not singly in the axils of short lateral branches ; but this seems owing to nothing more than the abortion of the leaves on their branches, possibly by reason of the crowds of flowers that appear in old specimens. It is probably the same as the *E. reflexa* of the Continent, a name for which we find no warrant. The flowers, although small and whitish, and therefore inconspicuous, are deliciously sweet. It is a hardy evergreen shrub or small tree, succeeding well in any good loamy soil. It flowers freely in June and July, and is only increased by seeds or by suckers, which are sometimes produced when the plants become old. It was raised in the garden of the Horticultural Society, from seeds received from Dr. Royle." *Bot. Reg.* 51.

Gar'denia Sherbou'rniæ. "A new, very handsome plant, received from Sierra Leone by Mrs. Sherbourne, of Hurst House, Prescott, Lancashire, and cultivated in her stove, among many other rare exotics, especially tropical fruits and useful plants. 'A question may arise,' adds Sir W. J. Hooker, 'as to the genus in which the plant ought to be placed; but I agree with Mr. Bentham in thinking, that whilst the several sections of *Gardenia*, as given by Endlicher, are comprehended in our genus, the present plant is rightly placed there. It blossomed, with Mrs. Sherbourne, in June, 1842. Mr. Whitfield, who first sent it to that lady, says that in Sierra Leone the fruit is an agreeable-tasted berry.' It is a climbing shrub, with handsome ovate leaves and large axillary flowers, that remind one of the blossoms of *Tecoma jasminoides*. They are nearly white on the outside, and a deep blood-colour within." *Bot. Mag.* 4044.

Hypocy'rta strigillo'sa. "Brazil, which is eminently rich in Gesneraceæ, has produced this fine plant, which belongs to one of Martius's new genera. *Hypocyrta*, as its name implies, is distinguished by a peculiar gibbosity or inflation of the under-side of the corolla, so as to give the appearance in form of a pouter pigeon. All the species, however, have not their inflation so remarkable as our present one, which belongs to the section called Oncogastrum, while the other section, with a more campanulated corolla, is called Codonanthon. The species are found, apparently, throughout tropical Brazil, some inhabiting the putrescent trunks of trees, while others are found luxuriating on the fat soil of the ant-hills. The present individual was imported by Mr. Veitch, of Exeter, having been sent home by his collector, Mr. Lobb, from the Organ Mountains of Brazil. Martius found it in the province of Minas, and also in the Sircore Mountains, province of Bahia. It bears a near affinity to *H. hirsuta;* but that has obovate leaves, and apparently a differently formed corolla. *H. strigillosa* flowered in Mr. Veitch's stove, in May, 1843." It is a neat evergreen downy shrub, bearing showy scarlet flowers in the axils of its lanceolate fleshy leaves. *Bot. Mag.* 4047.

Leia'nthus nigre'scens. "The genus *Leianthus* was founded by Griesbach upon the *Leianthus longifolius*, and with that plant our present one is undoubtedly a congener, and remarkable for the colour of the flower, approaching more nearly to black than any," writes Sir W. J. Hooker, "with which I am acquainted. Probably Chamisso and Schlechtendahl, in naming it *nigrescens*, had an idea that it became black only in drying ; and Griesbach and Don ever speak of the flowers as white, or greenish yellow, in the recent state. Such is not the case, however ; they are of as rich a deep blue, or rather purplish-blue black, as a flower can well be. But this singularity is not their only recommendation : they are large, graceful in form and inclination, (drooping like a *Fuchsia*,) so numerous as to form a large panicle, two or three feet high, and a foot and a half broad ; a great many are in beauty at one time, and they continue in perfection for a very long time, if kept cool and protected from the too-powerful rays of the sun. Indeed, with us, in a shady greenhouse, its flowers have been equally profuse and perfect for a period of four months. I scarcely know a more interesting plant that has for many years been introduced to our collections, even in this age of novelties, than the present. Schiede appears to be the first to discover it at Papantla, in Mexico. But it had long been known to Mr. Skinner as an inhabitant of Guatemala, and to him I am indebted for the plants which were reared from his seeds in the Royal Gardens of Kew, in 1842." It promises to produce seed. *Bot. Mag.* 4043.

TETRANE'MA MEXICA'RUM. Dr. Lindley has not "succeeded in ascertaining where the name *Pentstemon mexicanus,* under which this species is known in gardens, has been published. It has possibly originated in Belgium, whence the plant seems to have been introduced, as it is said, from Mexico. Mr. Bentham, who has given particular attention to this order of plants, is of opinion that this is certainly a new genus, very near *Pentstemon,* with the same calyx and corolla, but without any trace (or very little) of the sterile stamen so conspicuous in *Pentstemon.* It also differs, he says, from *Capraria and Russelia,* in its decidedly two-lipped corolla, and is further removed from other genera in many points. It was figured from a plant in the possession of Mr. Mountjoy, nurseryman, Ealing, and is a very pretty greenhouse plant, quite peculiar in its appearance, in consequence of its almost stemless habit, and the profusion of little corymbs of showy purple and white flowers which rise up from among the leaves, or long purple scapes. It should be top-dressed in autumn, and kept rather dry, in an intermediate house, between a stove and a green-house, during winter. In spring, it should be re-potted in light free soil, chiefly leaf-mould and sandy loam, and placed in a greenhouse, where it will remain in bloom the greater part of the summer. It may be propagated from seeds or cuttings in the usual way." *Bot. Reg.* 52.

VISCA'RIA OCULA'TA. "This plant is so like the old hardy annual, called *Agrostemma Cœli-rosea,* that for some time we regarded it as a mere variety. But upon a more minute examination, we find marks of difference that seem to belong to a species. In the first place, it has a dark eye, which the old kind has not. Then its petals have a short and slightly emarginate appendage, and not a long bifid one. In the form of the calyx there is this difference, that in the plant before us it contracts suddenly about the middle, while in *Cœli-rosea* it narrows very gradually. Furthermore, the surface of the seed-vessel here is rough, with fine granulations, but in *Cœli-rosea* is smooth. This, like the *Cœli-rosea,* is a hardy annual; it was gathered by Mr. Giles Manby on dry hills, thirty miles from Algiers, and given by him to Messrs. Backhouse, nurserymen, York, to whom our specimens are owing. It may be sown in any good rich garden soil, in the open border, about the end of March, in the usual way. Afterwards, the plants should be thinned so as to stand singly, in which state they flower longer, and produce much larger and finer blossoms. It may also be sown in the autumn, remain in pots in a cold frame through the winter, and be planted out about April. It flowers a great part of the summer and autumn." The plant has opposite, smooth lanceolate leaves, uniting at the base, and showy rosy lilac blossoms, with a dark centre, elevated on long slender upright stalks. *Bot. Reg.* 53.

GESNE'RA DI'SCOLOR. By some mistake, the *G. polyantha* introduced and flowered by Messrs. Veitch, of Exeter, has been considered by Sir W. J. Hooker identical with the *G. discolor.* The latter is an essentially different species, of decidedly shrubby habits, with immense and beautiful foliage, and producing panicles of flowers of considerable size, nearly the whole of the summer. At Messrs. Young's, Epsom, where it was first made known, it has been splendidly in flower for the last four months; and young plants, with not more than three inches of stem, are blooming profusely at this time in a cool stove. It is a highly ornamental stove plant; and, of its many good characteristics, that of blooming while in such a small state is unquestionably not the least meritorious.

OPERATIONS FOR NOVEMBER.

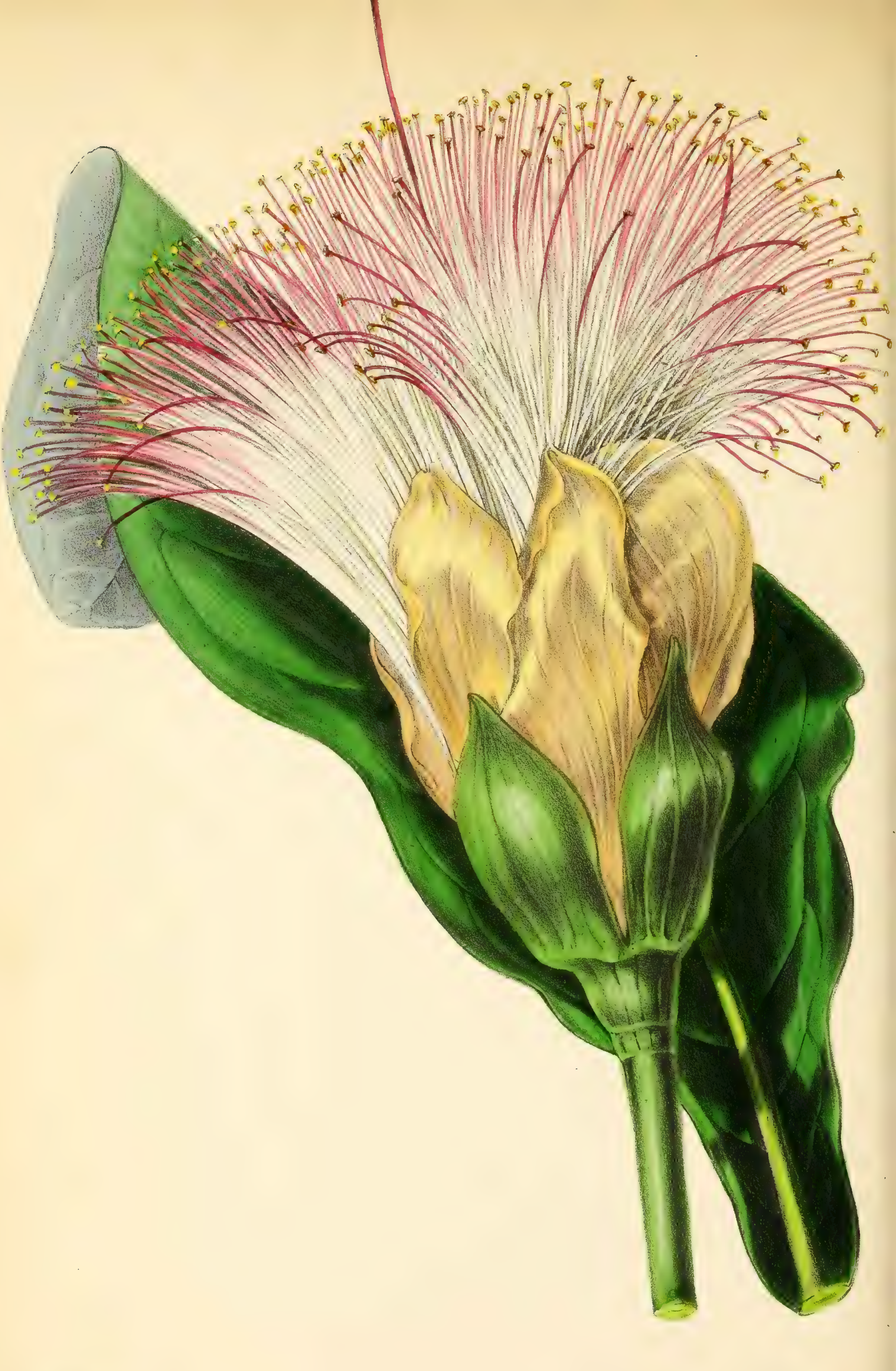
FROSTS having commenced so early this season, it behoves every cultivator to look well to all his tender plants immediately, and to see that they are prepared for withstanding any kind of weather which may now occur. The principles which we have inculcated in a previous part of this Number regarding the use of fire-heat, are of special application at the present time, in two ways. First, if fire-heat is now withheld, except in case of extreme need, it will be less necessary during the severer winter months. Plants will be rendered less tender, and will therefore require a less amount of protection. Secondly, if every opportunity is taken for hardening further, and yet more completely, the wood of exotics, by exposing them liberally to the open air, in dry weather, if it be not too cold, this will be another safeguard against frost, and a mode of economizing fuel. In well-cultivated collections, we have repeatedly seen the greenhouses quite open throughout the middle of the day at Christmas, even though there was three or four degrees of frost at night. It may be taken as a rule, that whenever the sun shines, or the air is perfectly dry, and not blowing too keenly from a very cold quarter, while it does not absolutely freeze, greenhouse plants are all the better for having the sashes in the house set open. Of course the same rule embraces pits and frames in a yet more stringent manner ; for the plants in these are commonly of a less susceptible nature than those in greenhouses. And as to stoves, although we would not recommend quite so much exposure, the plants in them will, if duly hardened, be much improved in real health, and in their capability of flowering abundantly in the following year, if they are kept without a fire as long as possible, and the temperature reduced by opening the lights whenever it is so sunny as to raise it materially, if the external air be likewise calm. No stove plant that is not in an improperly excited state will be otherwise than profited by being subjected to a frequent temperature of 40° Fahrenheit. It must be distinctly understood, however, that to warrant this reduction, there should be that absence of moisture in the air of the house, and that freedom from succulence in the plants, which can only be brought about by the careful preparation spoken of in a former page.

With regard to tender plants in the open air, it is alike requisite that the means of shelter should now be ready ; and it is equally important that this shelter should not be applied *permanently*, if the plants be small enough to admit of the protection being moved at pleasure. No plant in the open ground ought to be covered an hour more than is absolutely necessary ; for the undue continuance of any covering inevitably blanches and weakens it, or at least has a tendency to do so, and thus almost as much injury is done it as if it had been left quite unprotected. It is of the first moment to bear this in mind, in the case of all evergreens, and those kinds which may readily be prematurely excited into growth. The proper mode of sheltering an open-air exotic is to have the covering entirely moveable, where this can be done, and when such a plan is impracticable, there should be large doors left in the covering capable of being opened at pleasure, to admit the sun on the one side, and a current of air through the whole.

As this is the season for planting all kinds of bulbs, we may suggest again the desirableness of having a bed of hyacinths in the flower-garden, or in some part of the pleasure-ground. The trouble of sheltering a tulip-bed slightly during winter and in spring is thought nothing of ; and assuredly a good bed of hyacinths, while not demanding quite so much protection, is fully as ornamental. The soil for them should be of a peculiarly light description, and considerably enriched. A good deal of leaf mould, mixed with a sandy loam, would form an excellent compost.

Dahlias, and such kinds of plants, must now be taken up. It is not desirable to cut down their stems before the frost has injured them, nor to remove them from the ground before there is a real necessity for doing so, as the tubers continue maturing so long as they are not exposed to frost, or to excessive wet. Many plants with tuberous roots will also require to be put by for repose in the stove. These, however, are not to be taken from the pots, but merely kept in a very dry state.

All the leaves which are now falling from trees, and bestrewing the lawns of pleasure-grounds, should, when collected, be carefully laid by for the formation of leaf-mould. This is the most valuable of all soils in the culture of potted plants generally ; and yet there are very few places where it is cared for or preserved. Every barrowful will therefore be of use. If there be no immediate service which they can render, in creating a moist bottom-heat, they should be thrown in a heap, ready for such a purpose in the spring, prior to their being decomposed. Indeed, this is a good time for collecting soils of all descriptions, and spreading them out in flat heaps, to be mellowed and pulverized by the winter's frosts.



S. Holden del & Lith.

Barringtonia speciosa.

BARRINGTÒNIA SPECIÒSA.

(Showy Barringtonia.)

Class.
MONADELPHIA.

Order.
POLYANDRIA.

Natural Order.
MYRTÀCEÆ.

Generic Character.—*Tube of Calyx* ovate; limb two or rarely three-parted; lobes oval, obtuse, concave, permanent. *Petals* four, large, coriaceous. *Stamens* numerous, in many series; filaments filiform, long, free, but jointed together into a short ring at the base; anthers roundish. *Style* filiform, the length of the stamens; stigma simple. *Urceolus* rising from the top of the ovarium, and sheathing the base of the style. *Ovarium* four-celled; cells two-ovuled. *Berry* large, ventricose at the base, pyramidal and tetragonal upwards, crowned by the limb of the calyx, one celled when mature; cells obversely pear-shaped, fibrous. *Seeds* ovate-globose, pendulous, attenuated upwards. *Embryo* exalbuminous, elliptic-globose, having its radicle superior, and confused with the cotyledons, which are conferruminated, and the embryo is therefore pseudo-monocotyledonous.—*Don's Gard. and Botany.*

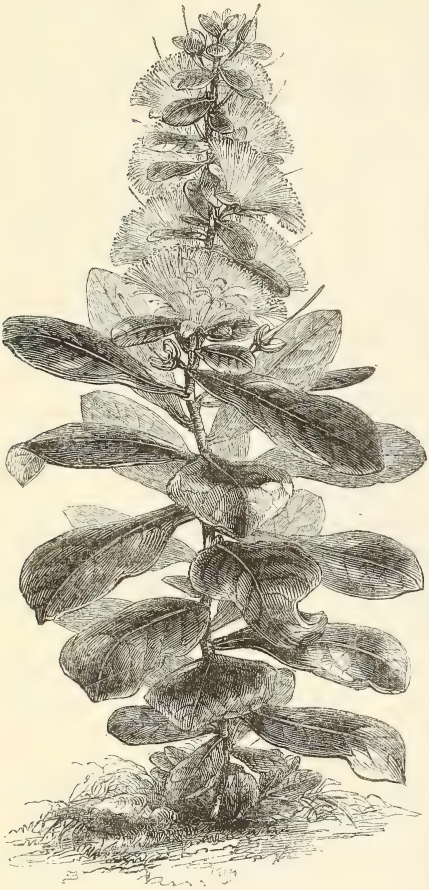
Specific Character.—*Plant* a small tree, evergreen. *Leaves* cuneately oblong, obtuse, shining. *Flowers* arranged in an upright thyrse. *Fruit* acutely tetragonal, pyramidal.

Synonyme.—*Butonica speciosa.*

Cultivators will be pleased to find that this noble plant, which is chiefly known in our stoves for its very handsome foliage, and for the alleged difficulty of growing it well, has produced its remarkable inflorescence in the stove of Colonel Baker, at Salisbury. To this gentleman we are under obligation for the specimens from which our figure was made; and we are also indebted to Miss Greenly, a daughter of the Rev. J. Greenly, of the Close, Salisbury, for two excellent drawings of the plant.

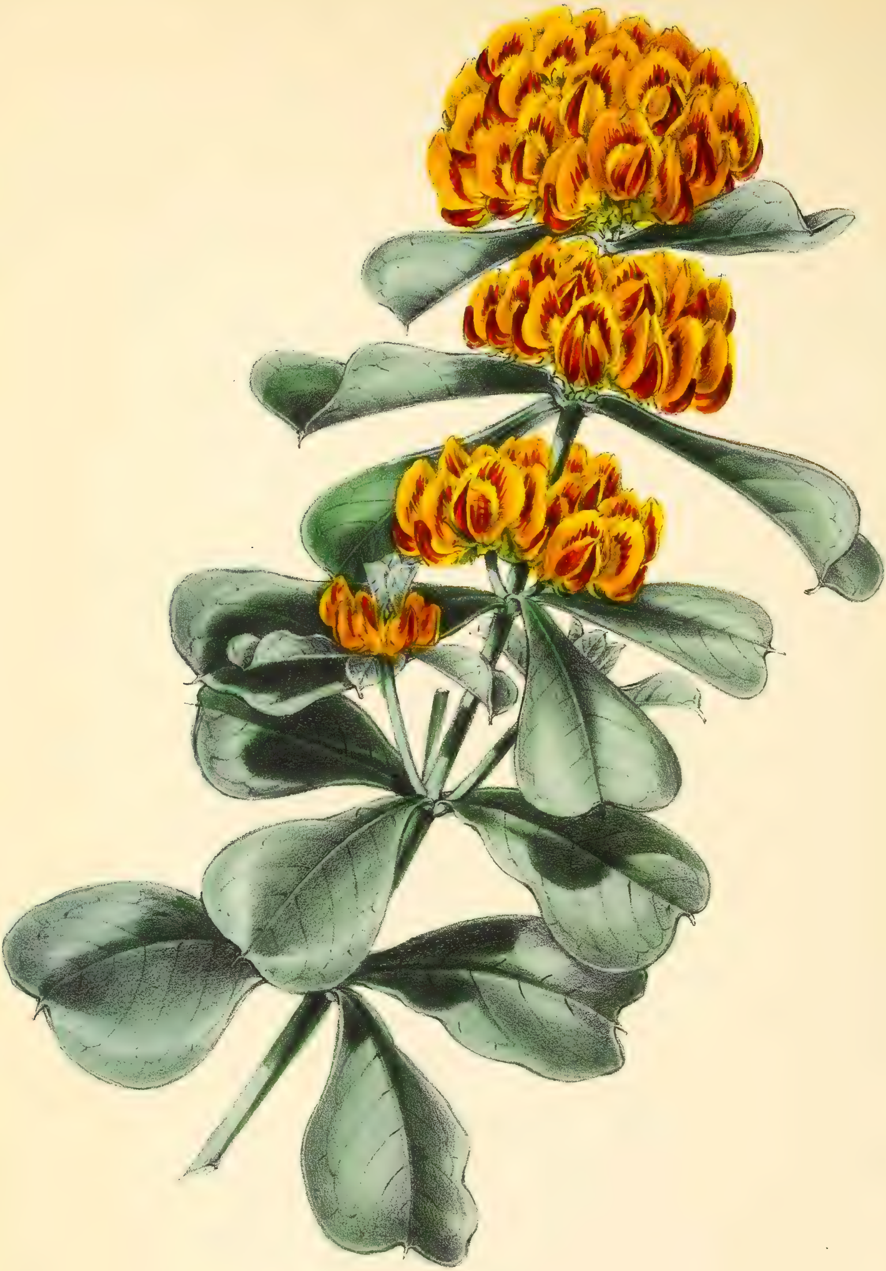
From Mr. Dodds, gardener to Colonel Baker, we have received the following account of the species, kindly furnished by the Rev. J. Greenly:—"It is a stately tree, which grows plentifully towards the coast of many of the islands in the Southern or Pacific Ocean, as well as in the various parts of India, China, and the Indian Islands. The bark is ash-coloured. The branches are numerous and spreading. The leaves are often more than a foot in length, of a strong and firm texture, with a lucid surface, and of a beautiful bright green. The flowers are numerous, large, and white, with a vast number of stamens of a deep sanguineous purple. They are produced from the upper parts of the branches, and blow chiefly in the evening, falling off the next morning, and are followed in succession by others. The tree continues in flowers for a considerable time."

Mr. Dodds has likewise favoured us with some interesting facts regarding his treatment of the plant. He says:—"We have had it about thirteen years. It is a plant of easy growth, likes plenty of moist heat, abundance of water in the growing season, and a little bottom heat. Knowing that the species, in its native state, attains a great height, I endeavoured to get age without much height. The plant we have now bloomed was not more than four feet high, when it showed flower. It has since made new shoots of more than four feet long. When our first plant was about eight feet high, I cut a foot off the top in March, and struck it. I found it root freely, and it was ready to pot in five weeks. This young plant was well-grown, and about the third year the top again taken off, and treated exactly the same as the other. The plant we have now bloomed was four years old last March. It was topped a year ago last March, and kept without a drop of water from November till the middle of March. It was then started into growth. About the beginning of May it had made shoots a foot or more in length, when I turned it out of the pot, shook nearly all the soil away, and cut back the roots. I then potted it into a twelve-inch pot, in a mixture of charcoal, loam, sand, and peat, and on the 4th of the following month (June) it threw up a fine spike of flowers. It is highly fragrant, something like *Cereus grandiflorus*, but more powerful." The remains of the flower-spike sent to us measured twenty-two inches in length.



Such is the process by which this splendid plant was induced to bloom. It is rich in instruction.

The genus was named *Butonica* by Rumphius. This title has since been abandoned for one which commemorates the Hon. Daines Barrington. The woodcut has been prepared from Miss Greenly's drawings.



S. Holden del. & lith.

Oxylobium obovatum.

OXYLÒBIUM OBOVÀTUM.

(Obovate-leaved Oxylobium.)

Class.
DECANDRIA.

Order.
MONOGYNIA.

Natural Order
LEGUMINOSÆ.

Generic Character.—*Calyx* profoundly five-cleft, somewhat bilabiate. *Carina* compressed the length of the wings, but about equal in length to the broad vexillum. *Stamens* inserted in the torus, or in the bottom of the calyx. *Style* ascending, crowned by a simple stigma. *Legume* sessile, or subsessile, many-seeded, ventricose, ovate, acute.—*Don's Gard. & Botany.*

Specific Character.—*Plant* an evergreen shrub. *Leaves* broadly obovate, cuneate, obtuse, mucronulate, thick, coriaceous. *Racemes* axillary, dense, capitate, many-flowered. *Calyx* covered with silky down, subferruginous. *Ovary* four-ovuled.

Synonyme.—*Oxylobium cuneatum.*

This plant belongs to a genus which is of great service to the cultivator of dwarf and free-blooming exotics, and which might be still more useful if their management were better attended to. They are mostly plants of good habit; and, when rightly grown, blossom most prodigally. But, as with many other good things, they will, if neglected, straggle, become bare at the lower part of the branches, flower sparingly, and assume altogether so indifferent an aspect, that they will only appear fit to be discarded.

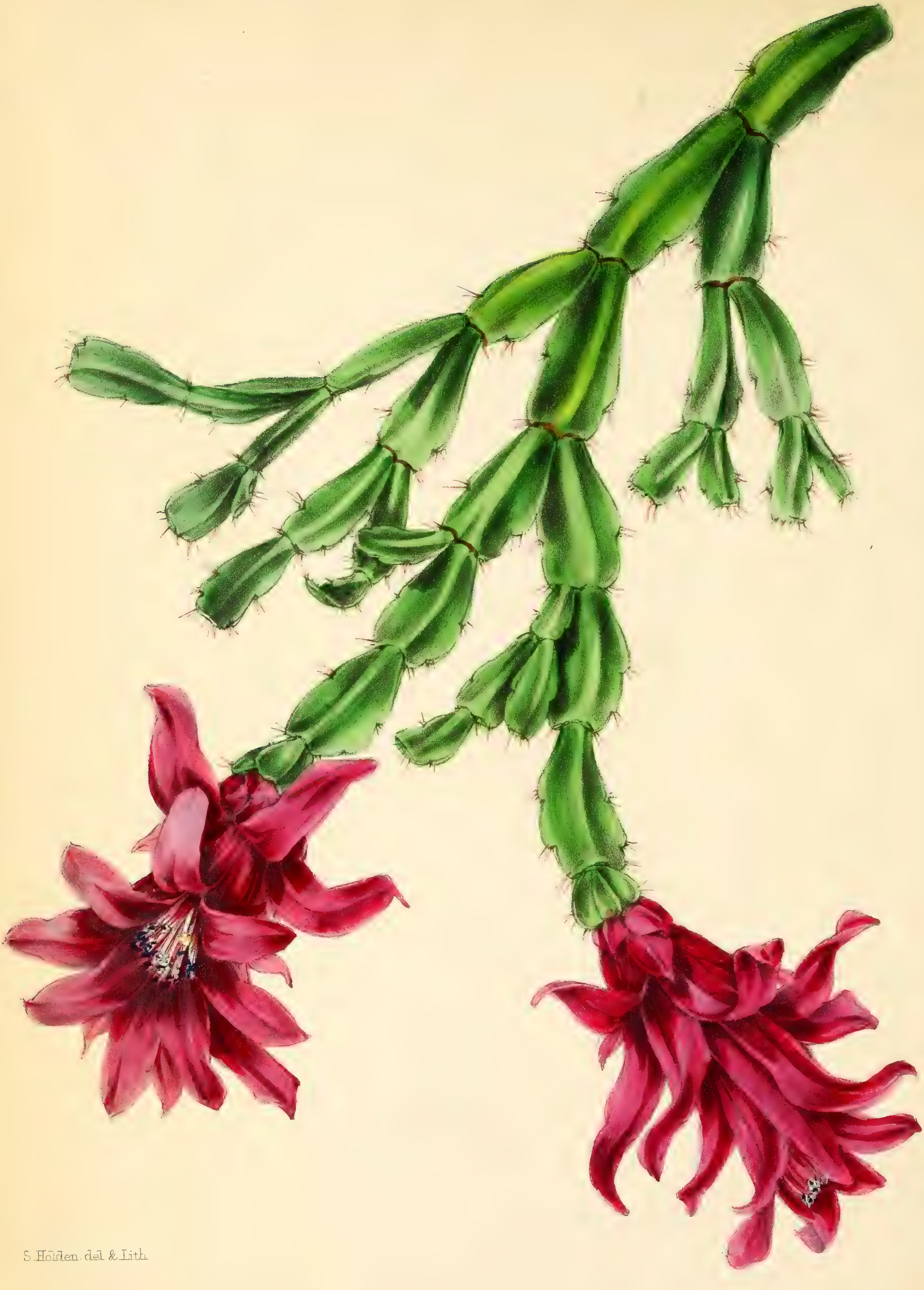
Yellow and brown are the common tints of their flowers; and they are not departed from in the present instance. These take, however, a variety of shades, and hence, the hues of our subject are not precisely like those of any other species. The blossoms in the genus are, moreover, differently brought together; some being arranged in a pretty long and dense spike, and others growing in flatter heads. In *O. obovatum*, neither of these forms are at all conspicuous; but it takes far more of the nature of a spike than a head or cluster.

In the leaves of our subject, like those of *O. retusum*, there is a marked peculiarity by which it may be easily known. These are what botanists term obovate; that is, they are ovate, but in a reversed manner; the base or broad part of the ovate figure being at the top of the leaf instead of the bottom. This relieves it at once from all chance of getting confounded with others, while, at the same time, it gives it a pleasing and ornamental character.

It was introduced from New Holland, about two years ago, by Mr. Low, of the Clapton nursery; and our figure was taken from a plant which flowered liberally at that place in April of the present year. The species seems to be almost as good as *O. retusum;* and much superior to the *O. capitatum.*

Potted in a light earth, that can be readily drained, and watered with care, there is little difficulty about its treatment. It must not, however, be left to grow too rambling; which it will do if it is not checked. The best way of pruning it is to lop the young shoots while they are growing in spring. The remaining part will then grow with augmented strength, and push forth fresh laterals with great vigour. Such a reduction of the shoots will hardly be necessary save while the plant is small. It will be of much importance at that period.

Cuttings prepared and treated in the customary manner, are not very slow in rooting.



S. Holden del & Lith

Epiphyllum Russellianum.

EPIPHÝLLUM RUSSELLIÀNUM.

(Duke of Bedford's Epiphyllum.)

Class.
ICOSANDRIA.

Order.
MONOGYNIA.

Natural Order.
CACTÀCEÆ.

Generic Character.—*Sepals* calyx-formed, adnate to the ovary; outer ones short; middle ones longer, reflexed; inner ones petal-like, united into a tube, with an oblique or regular orifice. *Stamens* filiform; middle ones shorter than the receptacle; outer ones longer, affixed to the tube. *Style* filiform. *Stigma* scanty.

Specific Character.—*Plant* a suberect shrub. *Joints* obovate, truncate on both sides, very obtuse, one-toothed, having a cluster of hairs in the teeth. *Corolla* with pretty equal spreading petals. *Ovary* four or five-winged. *Stamens* monadelphous at the base.

There is a near resemblance between this beautiful species and *E. truncatum*, with its variety *violaceum*. The habit of all three is very similar, and the appearance of the leaves, or foliaceous branches, is likewise of a related character. Still, these are much more slender in *E. Russellianum*, and more decidedly chain-like, or having the parts between the joints more regular and less flattened. Our present species has, moreover, a tendency to produce longer shoots, which, from their greater tenuity, are more drooping.

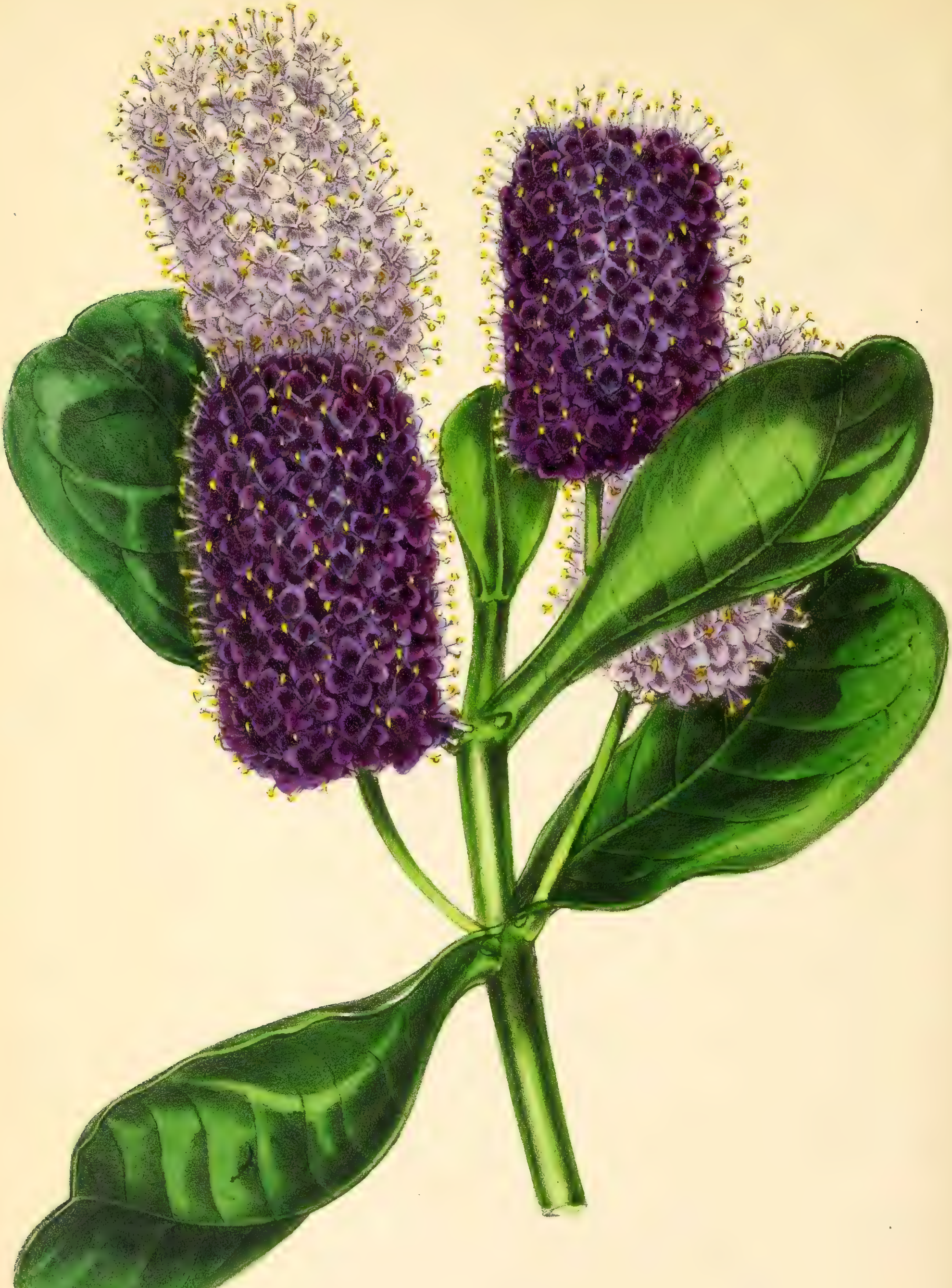
It is therefore a very fit associate for *E. truncatum*, and a good acquisition to any collection of the tribe. But its principal merit is in the hue of its flowers, which is most peculiar and exquisite. It excels that of almost all Cactæ, and even of the majority of Orchidaceæ. It is like that of *E. truncatum*, and also of its variety *violaceum*, yet different from both. We can only describe it by saying that the violaceous tint is not *upon* the crimsony scarlet, as in other flowers. It is not spread over part of the surface of another colour, merging into it in places. It is really *mixed* with the crimson in the texture of the flower, so as to produce one uniform colour.

We had our figure of it from the nursery of Messrs. Rollisson, Tooting, in April last. Unlike *E. truncatum*, it blossoms at various seasons under the same treatment; and is commonly seen in flower from October till May.

It will succeed very well if reared from a cutting, and grown upon its own roots; and, in this state, makes a capital plant for placing on the outside of a high shelf, or for hanging up to the roof of the stove. But it will thrive favourably too, and have an extremely characteristic appearance, if grafted on a standard *Pereskia aculiata*, about three feet in height, or on a single-stemmed *Cereus speciosissimus*, or any of the strong-growing kinds of *Cereus.* Its flexile branches will then have an opportunity of showing their true character.

To obtain young specimens from cuttings, it is only necessary to keep a little damp moss round any of the branches, at a joint, and there will speedily be roots formed at that place. Indeed, the plant roots freely at its joints, in a moist atmosphere, without any such external application.

It was found by Mr. Gardner, on the Organ Mountains of Brazil, and named after the late Duke of Bedford.



S Holden del. & Lith

Veronica speciosa

VERÓNICA SPECIÒSA.

(Showy Speedwell.)

Class.
DIANDRIA.

Order.
MONOGYNIA.

Natural Order.
SCROPHULARIÀCEÆ.

Generic Character.—*Calyx* four, rarely five-parted, campanulate or compressed. *Corolla* rotate, with a very short tube, and a four-parted spreading limb; segments all entire; upper one the broadest. *Stamens* two, situated at the sides of the upper segment of the corolla, diverging, without any vestige of the lower ones. *Anthers* two-celled; cells confluent at top. *Stigma* hardly thickened. *Valves* of capsule septiferous in the middle, or bipartible. *Seeds* naked.—*Don's Gard. and Botany.*

Specific Character.—*Plant* an evergreen shrub, growing about eighteen inches in height. *Leaves* opposite, sessile, nearly obovate, emarginate, a little undulated and irregular on the surface. *Spikes of flowers* axillary, on short stout peduncles, very dense. *Corollas* deep blue, fading almost to white.

With much of the aspect of *Lisianthus Russellianus*, this fine Speedwell constitutes a robust-growing shrub, decidedly evergreen, with an abundance of neat leaves, and an extraordinary number as well as succession of densely-clothed flower-spikes, which are about three inches in length, and bear deep blue blossoms, that fade away to white before they fall.

Mr. Knight, nurseryman, of the King's Road, Chelsea, received this beautiful species from Mr. Egerly, who brought it over from New Zealand in 1841. It flowered at the Exotic Nursery in August last, at which time we saw the plant developing numberless young spikes for blooming; one appearing at the axil of nearly every leaf. From that time to the present, it has remained finely in blossom, and promises to maintain this state throughout the greater part of the winter.

It is a particularly clean, healthy, and compact object, not rising, apparently, above a foot or a foot and a half in height, and having a profusion of bright green and shining foliage. When blooming, its character becomes still more interesting, on account of the great quantity of its flowers, which so thickly stud the stalks, and give a pretty variety, from being first blue, then white, as before mentioned.

Mr. Knight's flowering plant has been kept in a very cool part of the stove since it was first established; and any kind of pruning, for whatever purpose, has been carefully avoided. It is potted in a light open compost, full of fibre, and a moderately large pot. Other specimens are now flowering, which were raised from cuttings taken off the parent plant. These are placed in a warm house, with a rather higher temperature than that common to the greenhouse. But all the younger stock are healthy and flourishing in a perfectly cold greenhouse. It seems, in fact, that the plant is at least a greenhouse species, and that it will probably be half-hardy. From its vigorous blooming propensities, it will be of much value in ornamental culture ; and its constantly neat appearance will likewise be a recommendation.

It is not ascertained to what circumstance the generic title is due. The present plant well deserves its specific appellation.

GARDENING AS A SCIENCE.

No. XI.

In concluding this series for the year 1843, it will not be irrelevant to investigate a question of no little moment at the present time, and one which has very injuriously been rendered a subject of dispute. Our attention has been called to it by perusing the leading article of the *Gardeners' Chronicle* of Oct. 21, wherein allusion has been made to what is termed "the inconsiderate attack made by Professor Liebig upon Vegetable Physiologists."

Liebig is a chemist of the first class—his attack we shall shortly make known, previously remarking that he has been, perhaps, a little too zealous and too exclusive in advocating his noble science. But what cause of dispute can there exist between two sciences, each pre-eminent in its place, but utterly distinct in its bearing? *Vegetable Physiology* treats of structure, the disposition, and functions of organs. *Chemistry* investigates products; it is misapplied whenever it is made to interfere with the functions of vitality.

We have lately been induced to pay attention to the causes of vegetable changes, and in so doing have had to appeal exclusively to chemistry and chemical agents; or, in other words, to consider the operations of soils, decomposing vegetable matter, and metallic oxidizable bodies. But even in these inquiries, which are referred to pure chemistry, there exists a vast deal of misconception. *Vitality* (we know no term more appropriate) is co-existent with every phenomenon of chemical attraction or repulsion; because, in fact, electricity is revealed, or at least concerned, in every movement. If a drop of water be decomposed by the agency of iron filings, a volume of elementary fire, equivalent to a powerful flash of lightning, is extricated; and, though it passes silently, it still is itself the disturbing power: if a portion of leaf-mould be decomposed, its elements are enabled to recombine in multifarious forms, some liquid, others gaseous, by the play of electric affinities. But, though this be true, chemistry, in our acceptation of the word, cannot be directed by human machinery so as to affect any of the phenomena of *vital action:* therefore we distinguish *natural electricity* from chemical energy, because the former is displayed in the functions and secretions of organic life, whereas the latter is exerted upon dead or effete matter, in order to resolve it into its elements.

Now, if Liebig erred, it was in the implied suggestion that the processes of *life* were dependent upon chemical agency; and herein his zeal might have overrun his discretion. But as to his attacks upon physiologists, let us see to what they amount:—

"Physiologists," he observes (p. 33), "reject the aid of chemistry in their inquiry into the secrets of vitality, although it alone could guide them in the true path; they reject chemistry, because in its pursuit of knowledge it *destroys* the subjects of investigation; but they forget that the knife of the anatomist must dismember the body, and destroy its organs, if an account is to be given of their form, structure, and functions.

"The second cause of the incredulity with which physiologists view the theory of the nutrition of plants by the carbonic acid of the atmosphere is, that the art of experimenting is not known in physiology, it being an art which can be learned accurately only in the chemical laboratory. Nature speaks to us in a peculiar language—in the language of phenomena; she answers at all times the questions which are put to her, and such questions are experiments. An experiment is the expression of a thought: we are near the truth when the phenomenon elicited by the experiment corresponds to the thought; while the opposite result shows that the question was falsely stated, and that the conception was erroneous."

This is perfectly true, and beautifully expressed; but where is the attack? We find it on the other side, in the decided hostility which has marked the reviews of Liebig's work, and wherein a spirit of rancour, of asperity, and sarcastic criticism, have been most illiberally manifested.

But Liebig had laid himself open to rebuke, inasmuch as he sweepingly accused all physiologists of ignorance; whereas, had he taken a correct, and not merely a restricted, view of a few foreign writers (forgetting the real skill and liberality of other men of enlightened and enlarged minds), he would have seen that there existed eminent physiologists who, instead of despising chemistry, were fully alive to its importance, and honoured it as a noble science of analysis, while they appreciated its powers without debasing them by endeavouring to prove too much.

Physiology is a science of anatomical dissection; the operator who cuts and carves his delicate subjects with knife or lancet, effectually destroys it. The chemist does no more with his tests and reagents; neither the one nor the other can detect a trace of the principle of life. The tissue, the fibres, the cells, may be torn and rent to pieces by the instrument, or broken up by the caustic agency of corrosive acids, (which, by the way, is a tacit avowal of the necessity of appealing to chemical powers,) yet the physiologist remains in profound ignorance of causes.

The chemist is utterly powerless in his attempts to produce any compounds in the slightest degree resembling the products of vitality; but he can effect what the physiologist would endeavour in vain even to conjecture: for, by analyzing those products, he can with surprising accuracy develop certain elements, which demonstrate that *from a very few principles*, the powers of nature produce millions of beautiful modifications.

The grand combining and decomposing primary agent appears to be the light of the sun, or certain portions of it diffused throughout all matter in the form of those mysterious fluids which we term electricity and magnetism. These appear to be the proximate causes of attraction throughout the universe; and to the chemist (the point must be ceded) belongs all the honour of the sublime discovery.

Let, therefore, the sons of science coalesce, and instead of jarring, exert their utmost powers to honour one another, and to extend the circle of general utility.

The establishment of scientific colleges, or educational schools, wherein the principles of agriculture and gardening shall be investigated, taught, and practised, would be a mighty engine in the great work—and we hail the dawn of promise. Finally, we appeal to one more extract from the work of the excellent and defamed German philosopher, Liebig: it is of more worth than all the fictions that have been written to his disparagement. He says:—

"It is too much forgotten by physiologists that their duty really is, not to refute the experiments of others, nor to show that they are erroneous, but to discover truth, and that alone. It is startling when we reflect that all the time and energy of a multitude of persons of genius, talent, and knowledge, are expended in endeavours to demonstrate each other's errors."

We rejoice to perceive that this able pen is at work again: a new publication is just announced.

Several years since, a *Treatise on Vegetable Physiology* was published by the Society for the Diffusion of Useful Knowledge, wherein the writer recommended the use of a corrosive acid, to detect the position of the vessels and fibres of vegetable structure. "If we wish," he said, "to examine the component parts of a plant, the portion containing them should be *plunged in nitric acid*, and the phial *placed in boiling water*, which must be kept at the boiling point for twelve or fifteen minutes."

Never were there directions more vague, unsatisfactory—and, to the chemical student, more unworthy of credit. We combated the fallacy at the time, because we had proved that by the use of aquafortis, the vegetable tissue must be inevitably broken up and destroyed. Even at the present day, when the operation of chemical agents is far more extensively understood, it will not be irrelevant to retrace a few of the observations which, sixteen years ago, had warned the tyro in microscopic researches to refrain from, or employ with the utmost caution, certain agents whose operation at all times is violent, and inevitably tends to destroy whatever they in any degree *can* act upon.

Let us presume that a small slice of the growing stem of asparagus be investigated in order to detect the sap-vessels, air-cells, and fibres with which it abounds (the stem of a lily or asphodel would do as well), and placed as directed in a phial of nitrous acid, at a boiling heat. What, we ask, would be the result? If the whole tissue were not destroyed—if by bare possibility any tangible atom might remain—it would be so imbued with acid that every instrument of dissection, unless made of glass, would be blackened, corroded, and rendered entirely useless. The directions made no allusion to the strength or gravity of the acid—and we were led to suppose that it was to be employed pure, and in its undiluted state.

Experiments were then resorted to, and, as might be expected, portions of plants, one after the other, were decomposed, and even dissolved: in fact, it could not be otherwise. For nitric acid, or what is familiarly styled *aquafortis*, is one of the most highly oxygenated agents we possess, and which, at the same time, liberates its oxygen with great facility. Hence, it acts upon instruments of steel or brass with great energy; and, therefore, we again see the inexpediency of having recourse to a solvent, which can never lead to accurate conclusions, and is in itself extremely dangerous to the operator.

We are not aware that any pursuit is more worthy of the inquiring mind than the study of vegetable structure; but it is attended with singular difficulty, and is subject to extraordinary optical delusion. We may, at a future day, be led to offer a series of remarks upon vegetable physiology, especially as the subject of the present article may be construed as being too favourable to chemical investigation. However, not to leave the question in doubt, we urge the adoption of every prudent means of investigation, repeating what has already been asserted, that chemistry can only be applied to vegetable *products*, not to the discovery of organic functions; and thus we advocate the cause of physiology, while we appeal to chemistry as a powerful coadjutor.

In *dissecting* vegetable bodies, a keen eye, an adroit and practised hand, and a certain intuitive perception are indispensable. With these prime requisites, dissections may be performed, by the aid of no other fluid agent than that of pure warm water.

A good microscope, with a set of single lenses, and furnished with an improved stage on which the hands may rest, and yet act with perfect freedom, is the chief instrument, to which must be added, needles, tweezers, and a small dissecting-knife, or lancet. We may thus arrive at some rational theory, but still shall remain ignorant of all connected with vitality.

ECONOMY IN FLORICULTURE.

Continuing our suggestions on this prolific subject, we may notice that, by the arrangement of plants in houses, a means is afforded of consulting economy in a considerable degree; since, accordingly as different plans are adopted, the same superficial covering of glass may be made to protect a very varied number of plants, and also to give them suitable accommodation. For it must at once be affirmed, that no crowding of the specimens, in such a manner as to injure them, would, in our view, be at all a prudent or economical course. It is only by giving them all the room they require, and by doing this in such a way as shall put a greater than usual quantity of plants beneath the same roof, that a *real* and *ultimate* saving is to be accomplished.

Now, one of the methods of economizing space in plant-houses, is by following out a well-known law relative to surfaces generally. It is universally understood that a pyramid, a cone, or any other elevated figure, presents a far greater superficial area than a flat or plane surface of the same dimensions. Hence, a hill might be planted so as to take many more plants at the same distance from each other at the base, than a level space of the same horizontal dimensions.

Perhaps a knowledge of this fact, and probably other kinds of convenience, likewise, as well as improved effect, has led cultivators to adopt the sorts of stage, with an ascending series of steps, in common use for greenhouse plants. Certain it is, however, that these stages are susceptible of great improvement in regard to the number of plants they contain ; for, in most instances, they are carried up far less perpendicularly than they might be ; and, as we have just hinted, the steeper the ascent, the greater the amount of surface it will offer.

Two fundamental rules of economy in the erection of plant-houses are, that they should neither be very high, nor very broad. The formation of the stages in the manner we have mentioned will be in accordance with these. Whether the house be span-roofed, or of the more ordinary lean-to form, and whether the stages be simply parallel or divided into pyramids, cones, &c., with the walks winding between them, the bottom of the stage should be nearly on a level with the floor, and the top as near as possible to the roof. The intermediate steps should be so perpendicular that each one may overhang the other about half an inch or an inch, and be only broad enough to let the pots stand on them with safety. In this way, a very great saving of space will be realized, as well in the breadth of the house, as in the increased number of plants it will contain.

The opposition that might be raised to such a plan on account of the liability that the drainage from one row of plants might fall into the pots of the row beneath it, is not worthy of a moment's thought, because it can be so easily obviated. By placing a small strip of wood along the front of each shelf of the stage, so as to form a ledge that would prevent the water from falling over the front, and by puttying and painting the junction between this and the shelf, in order to make it water-tight, all the fluid that escapes from the pots would be thrown off at the *back* of the shelf, where, of course, it could not fall on any of the lowermost plants. Indeed, this is a practice which ought invariably to be pursued, whatever may be the nature or construction of the stage employed.

Another point in making stages for plant-houses deserves attention in regard to economy as well as to the benefit of the plants. This is the formation of the shelves of longitudinal bars of wood, with open spaces between them, instead of cutting them in one plain piece. By the former method, the water passes off far more freely, and less wood is required.

A further saving of room will be occasioned if the shelves of the stage be placed rather nearer to each other than they commonly are. Where there are broad openings between the shelves of a stage, the under part of it becomes visible ; and it is a point of taste to let as little as possible of anything be seen but the leaves and flowers of the plants.

In regard to the appearance of a stage made more perpendicular than the generality of such things are, there could be no possible objection; for, though the plants would be brought nearer to the eye, and the power of surveying them all at a glance would be thus diminished, there would be a better opportunity for examining them individually; and, by arranging them alternately with each other, and not opposite in the rows, they would be rendered sufficiently dense to prevent the eye from looking through them, and being too much fixed on the ground, or on the supports beneath the stage.

But there is yet a further mode in which room may be gained in plant-houses; viz. by the employment of suspended shelves. During summer, as we have often before said, little necessity exists for filling every inch of space in greenhouses, as frames and the open air afford such a ready means of disposing of all the more hardy species. In winter, however, the case is far otherwise. All available room is then valuable; since, when fire-heat is necessarily applied, it will of course be most economical to bring the greatest possible number of plants within one house, to be heated by the same apparatus. Not that, even then, we would ever seem to advocate crowding the specimens; for this would destroy one of the principles of economy which we began by establishing. Still, much may be done through the assistance of extra shelves.

To notice, first, the space over the walks of houses, there is here a most unobjectionable provision for accommodating an additional number of plants, by having a moveable shelf fixed so closely to the glass, that small plants shall just have room to stand on it without touching the roof. Such a shelf might be made the full breadth of the walk, and would hold a great many small plants, such as those which had been raised during the previous summer from cuttings, beside seedlings, and the smaller specimens. It might be constructed so as to have a light and neat aspect, and to be removeable at pleasure, so that, if desirable, it might be entirely taken away in spring. To drain off the water, the shelf should be provided with small strips of wood along its edges, in the first place stopping this and any other junction effectually with putty and paint; and then a couple of small grooves should be made near each edge, on the upper side of the shelf, with occasional apertures, at convenient places, to let the water run through. This is preferable to having an irregular drip from various parts of the shelf, and should never be neglected.

It becomes a matter of serious question whether shelves can be introduced to any other of the upper parts of plant-houses, inasmuch as, where they would cause a drip of water to fall from the plants they support, upon other plants beneath them, they would be decidedly mischievous; and still more prejudicial would they be, did they serve materially to exclude the sun's rays from acting on the plants beneath them. Yet, with reference to the first of these considerations, the simple plan to which we have alluded for carrying off the water only in particular places, might be made to bear so thoroughly, as to do away with any objections on that score; for it would be easy so to arrange the pots below such a shelf, that the run of water avoided both them and the plants. And, in relation to the other question, there are positions in houses in which a shelf might be hung, without casting the slightest shade on the plants below it during winter. Such is the centre of the house, close to the roof, in a span-roofed structure; and such, also, is the back part of a lean-to house.

In a span-roofed erection, a shelf of at least two feet broad might be suspended along the middle, with the greatest propriety, through the winter months: and here would be another means of housing a large extra quantity of the smaller sorts of plants. Against or near the back of a lean-to erection, likewise, there might be placed a shelf of similar breadth, which would, like the other, hold a considerable quantity of young stock.

What makes the employment of such shelves all the more desirable is their extreme adaptation to the wants of the plants which would be placed on them. Nothing is more beneficial to plants in the winter than proximity to the glass, and a dry, airy situation. On such shelves, these conditions would be supplied in a perfection which could not otherwise be realized.

To those persons who have very little spare house-room, especially in winter, and who naturally wish to keep up as extensive a collection as they can, it is believed that the hints now offered will be of some use, in aiding them to accomplish their purpose with a comparatively small expenditure. Lest, however, by appearing to favour the views of those who would desire extensive collections without a due regard to variety and genuine ornament, we should suffer our remarks to be mistaken, we shall now offer a few observations on the economical bearings of this question.

Cultivators who imagine that they add to the effect of their houses by filling them, at all times, with the greatest possible quantity of plants, in a comparatively inferior state, are most seriously in error. The true economy is, as we at first showed, that which takes in the ends attained, and not that which merely compasses seemingly great objects. A house, containing a hundred beautiful and well-grown specimens, is of much more value than the same structure filled with three hundred in a deformed or badly cultivated state. And hence, collections should be composed of select and choice kinds, finely cultivated, instead of a more numerous and promiscuous assemblage.

It is probably one of the most important matters in all the range of economy, as respects plant-houses, to occupy them with none but decidedly good and showy plants. A very few insignificant things suffice to stamp a character of inferiority on a collection which is, generally, of the highest order. They detract immensely from its richness and its finish; giving it at once an air of meanness, of heterogeneousness, and of imperfection.

Beyond this, however, if we take the expense of the thing into account, it is of moment that every plant should effect its object, and tell upon the general appearance; while each specimen that is not of a duly ornamental description may be looked upon as creating useless expenditure, and filling a space to a really bad purpose, which might be devoted to a really good one.

From all we have said, then, it may be deduced that economy will be most truly studied, when the cultivator is particularly careful not to retain a specimen in his collection which does not possess a thoroughly ornamental character; and, moreover, when each one of the specimens so kept is cultivated to the full extent of its capacity, and not merely preserved in a feeble or languishing condition.

On the last-named point, it may be well to make some additional statement. The aim of the culturist, undoubtedly, is to produce as good and as attractive a display from his plants as their nature and his circumstances will permit. Whether, therefore, six first-rate specimens would not be, in all respects and at all seasons, more pleasing as well as showy than nine of a second or third-rate order, it is in the power of any one to determine; and we believe that the reply of the better informed and tasteful would invariably be in the affirmative. There is, indeed, nearly as much to admire in a plant of the highest excellence, as in two that are cultivated but imperfectly; and we now speak but generally. When, again, individual features and peculiarities come to be examined, the comparison is yet more striking. And we are consequently justified in deducing that, as the system which accomplishes the object in view best, if it do it with the least expense of time and labour—as is clearly the fact in the case we are discussing—must demonstrably be far the most economical; so, by diminishing the usual number of plants cultivated, and growing them remarkably well, the cultivator will be a considerable saver.

We hardly know whether it is most necessary to urge this on the managers of large or of small collections. The first class are mostly inclined to err this way, in order to give additional amplitude to what is already so extensive. The other class are strongly tempted to the same course, by the wish to impart variety and apparent comprehensiveness to their collections. In both instances there is a practical forgetfulness of the truth, that only what is good and beautiful can confer stable pleasure. But as we refer chiefly to economical considerations, it is likely that the more limited cultivators will be affected most by our argument; and to such we would repeat, that they will best promote a sound economy by thinning their houses of whatever plants are at all lacking in beauty, and making good the collection by a smaller quantity of notoriously handsome kinds. The great design of every floriculturist should be to get, first, pleasing individual specimens, which can excite admiration of themselves; and then it will be a task altogether without difficulty to group these together, so as to compose an attractive whole.

CULTURE OF ERICA CERINTHOIDES.

Within the last few years, the treatment of Heaths has been so improved, in many leading gardens, that a taste for their cultivation may be said to have quite revived, and to have spread itself considerably. Still, estimating the strong claims they have to public regard, they by no means yet occupy that position which they may be expected to attain, and which the diffusion of enlightenment respecting their culture will assuredly one day give them.

It would be absurd to attempt to specify their varied beauties. Every one at all acquainted with exotics must be familiar with Heaths; which, in some of their very numerous species, find their way into almost all the greenhouses of the country; but which, singularly enough, are scarcely ever seen in a cottage or even a drawing-room window. This latter fact would not be easy to account for, particularly in those districts where excellent moor-soil is so abundant, and constitutes, indeed, nearly the sole natural earth; were it not that a prejudice has gone abroad relative to the arduousness of growing them well, and the more humble cultivator is therefore fearful of attempting such mysteries.

If we except the peculiar soil they demand, and which, as we have hinted, is so readily obtained in many parts, some of the Heaths are far from being so difficult to manage in a sitting-room, with exposure to the open air during summer, as other plants that are yet dauntlessly endeavoured to be grown. Camellias are an example of this. It is really an exceedingly doubtful undertaking to try to flower these well in a room. But there are some of the hardier Heaths, which are extremely beautiful, and which every cottager who can grow Myrtles, and such like plants, might bring to great perfection; the main things to attend to being, to let the heath-mould in which they are potted, be of a pale colour, and very full of fibre, and not to pull it to pieces too much in preparing it, mixing a small quantity of broken stone with it when it is used, and putting some of the rougher pieces over the drainage in the bottom of the pot. The error of most amateurs is, that they reduce their soil to too fine a state, thinking thereby to benefit their plants. Quite the reverse of this should be their procedure. The soil should be left almost as rough as possible, provided it is free from green or soft vegetable matter, and large stones.

Potted in an earth like that just recommended, and placed, throughout the summer, in a slightly shady position, and not in one where the full rays of the sun can beat upon them, and dry up the soil in the pots too rapidly, many Heaths will thrive very well beneath cottagers' treatment. Only, they should be freely watered in summer, and not left to be parched up by drought.

But there is a tribe of Heaths which, as all acknowledge, require unusual skill in their management, to render them constantly beautiful objects, and keep them in that healthy state from which they are so liable to depart. It is a common observation among practical men, that some Heaths may, with the most ordinary skill, be brought to a state of the greatest splendour; while others demand the most untiring attention. Of the first sort, the varieties of *E. ventricosa* will be a good illustration; the varieties of *E. vestita* being examples of the second.

The principal desideratum among these latter kinds of Heaths, is to get good bushy plants, not at all straggling, with plenty of deep green foliage, and the absence of that tendency to decay which is so often visible, especially in the lower portions of the plant. When these are secured, a profusion of bloom follows almost as a matter of course; since the kinds in question mostly blossom towards the ends of the branches, and always upon the lateral shoots, if they are sufficiently strong. When, therefore, the plant is full of healthy shoots, there is something next to a certainty that it will flower finely.

Perhaps *E. cerinthoides*, the species on which we are now to remark, can hardly be ranked among the most difficult to manage. It is, however, above the common order; and, being much disposed to produce bare branches, and to grow a little rambling, it comes very near the *vestitas* in regard to treatment.

It is a very beautiful species, having its foliage prettily covered with down, and its showy scarlet blossoms arranged in a kind of coronet at the tops of the stems or branches. In the condition in which it is most common about our greenhouses, it is seldom at all attractive; being wholly wanting in that fine symmetry which gives so much additional grace to any plant. The branches are very irregular, generally crooked, mostly naked at the bottom, and flowering but imperfectly.

There is a circumstance in the natural habits of this species which, when known, and the treatment adapted thereto, is calculated altogether to renovate its appearance; in short, to give it quite a new and superior character. This is its disposition to throw out a great quantity of young shoots from the stem, near its base, if at all encouraged to do so.

When left to itself, and not well managed in other respects, the tendency of which we have spoken is rarely manifested. But when the plant is potted in a good fibrous soil, liberally treated as to water and pot-room, and cut down nearly to the bottom of the stem as soon as it gets at all diffuse in its growth, it begins to produce new shoots in abundance, and will continue doing so afterwards every year, so that there will be the means of renewing the healthiness and beauty of the specimen ever at hand.

We have seen this course of treatment pursued with *E. cerinthoides*, and it was attended with the greatest advantage. The whole plant seemed to be invigorated by the process, especially after it had been performed once or twice: for, instead of the repeated operation weakening the specimen, it appeared to have a contrary effect. At any rate, an increased profusion of shoots was thrown out at each pruning, and these were invested with the healthiest of foliage, and crowned with the finest of flowers. In the place of weakly, deformed, and half-naked shoots, some overgrowing the others, and only a few of them blooming, the specimens were brought into order and beauty, and a free state of flowering, such as is really delightful to witness, and would astonish many growers.

The pruning to which we allude is done in the autumn, when the plants are in a condition approximating to torpidity. At that time the new shoots have mostly begun to show themselves; and if the specimen be repotted in spring, they then get such a stimulus that they develop with extreme vigour, and flower in the summer and early autumn. From the regularity of their growth, more heads of blossom are expanded at once than is usually the case, and a better display is thus occasioned.

As far as we can determine, from the nature of the facts, there is every probability that other kinds of Heath might be treated successfully in the same manner. Should this prove correct, many of those stubborn old plants which it has required years to bring to any size, but which, in spite of the best care, have become deformed or sickly, might be readily restored to a healthy and bushy state. The system is at least worth trying on them. Some varieties of *vestita*, when cut in very hard for propagating, will branch in the freest manner; and why a similar pruning should not be made available to restore them to compactness when they have got straggling, there seems no valid reason. Nor would it be amiss to experiment a little on some shabby old plants of such kinds as *Irbyana* or *aristata*. It is impossible to determine positively what would be the issue of such an operation, until it has been tried. We can only say that the probabilities in its favour are sufficiently good to warrant its practice wherever specimens that have lost their ornamental aspect exist.

FLORICULTURAL NOTICES.

NEW OR BEAUTIFUL PLANTS FIGURED IN THE LEADING BOTANICAL PERIODICALS FOR NOVEMBER.

ACHIMEN'ES HIRSU'TA. "This pretty plant forms another acceptable addition to the charming genus *Achimenes*, and will probably become almost as great a favourite as any of the species. In habit it bears the nearest resemblance to *A. pedunculata*; and, like that beautiful thing, is disposed to bear little bulbs in the axils of its leaves and branches." It was obtained from Guatemala, by Messrs. Henderson, of the Pine-Apple Place Nursery, Edgeware Road, having sprung up among some Orchidaceous plants that had been imported from that country. "As has been already stated, this species has the habit of *A. pedunculata*, but is nevertheless a very different species. The leaves are covered with coarse hairs; the flowers are much larger, not at all striped, but have a deep rose-coloured border, whose lobes are notched. It should be potted in a compost consisting of peat, loam, and sand, in equal proportions. In autumn, after flowering, the plant will naturally die down, but tubers will be formed at its roots, which may be kept in the soil during winter in the same manner as bulbs are kept, taking care to protect them from frost. In spring, as soon as they commence growing, they should be potted. Three tubers in a pot will produce a large plant. Although a stove plant, it requires plenty of air when the weather will allow, with an ample supply of water to its roots, but very little overhead: otherwise, instead of flowers, small scaly tubers will be formed in the axils of the leaves." The colour of the flowers is a deep rose. *Bot. Reg.* 55.

Acro'phyllum verticilla'tum. Here is the lovely *Acrophyllum* (*Weinmannia*) *venosum* with a fresh name; though it is extremely doubtful whether the present appellation will be at all adopted. "My first knowledge of this plant," writes Sir W. J. Hooker, "was derived from specimens gathered on the Blue Mountains of New Holland by Mr. Allan Cunningham, who transmitted them to England under the name of *Weinmannia*, a genus to which it is doubtless nearly allied." It has been referred to a genus called *Calycomis* by Mr. Brown, and adopted by Mr. Don. The propriety of such a name is questioned by Sir W. J. Hooker. "The plant is peculiarly handsome; it was introduced into our gardens by Mr. Allan Cunningham, and, with the common treatment of the greenhouse, it flowers in great profusion during the spring months." *Bot. Mag.* 4050.

A'erides a'ffine. "There is a peculiar delicacy and beauty in the Orchidaceæ of the East Indies, and especially in the genus to which the present plant belongs, which, combined with the difficulty of obtaining them, renders them peculiarly valuable to the cultivator, and causes them to be eagerly sought after. *Aerides affine* was sent to the Royal Botanic Gardens of Kew by Dr. Wallich, from the mountains of Nepal, near Sheopore. It had been previously found in Sylhet, by Dr. Roxburgh. Our plant, however, graceful and elegant as it is, is very inferior to the native specimen represented in Dr. Lindley's splendid "Sertum Orchidaceum," from a drawing in the possession of the Honourable the Court of Directors of the East India Company. In another respect, too, it differs: the racemes of flowers are there represented erect; with us, the flowers, and, indeed, the leaves too, are drooping. In the Orchidaceous stove it blooms in April." The leaves are narrower than those of most other species, and the flowers are pale rose, blotched with rosy purple, being produced in long racemes. *Bot. Mag.* 4049.

Alstrœme'ria lineatiflo'ra. "At last we have the pleasure of publishing the true *Alstrœmeria lineatiflora*, from Peruvian roots presented to the Horticultural Society by John Maclean, Esq., of Lima. It is one of the finest of its class, and although doubtless very near *A. Ligtu*, *peregrina*, and *pulchra*, apparently distinct from either. In addition to the discriminating marks between these beautiful species pointed out by the learned investigator of the genus (*Herbert*, *Amaryllidaceæ*, p. 93), it will be found that *A. pulchra* has the sepals and petals constantly serrated, which is never the case in the other three, and that the form of their leaves or sepals affords clear marks for further discrimination. In *A. lineatiflora* the leaves are short, very blunt, and of nearly equal size; in *A. peregrina* they are also of nearly equal size, but very sharp; and in *Ligtu* the upper are very narrow and taper-pointed. Then as to the sepals: in *A. peregrina* they are deeply obcordate; in *pulchra* narrow, spatulate, obovate with a little point; in *Ligtu* roundish-obovate, with a very small point; and in *lineatiflora* obovately wedge-shaped, with a large point. By these marks it appears that these species may be certainly distinguished; and that, being so, we are constrained to regard *A. lineatiflora* as a good species, and not a mere variety of *Ligtu*. It is a greenhouse perennial, and thrives best in a compost consisting of one half loam, the other peat and sand. This, like many other species of *Alstrœmeria*, produces tuberous roots in a horizontal direction, consequently it requires a large pot, which should be nearly half filled with potsherds. In autumn the plant should be set in some airy place, where it will receive very little water, until the beginning of January, when it should be repotted. While in a growing state, plenty of water should be given, and air at all times when the weather will permit. It may be propagated abundantly from seed." *Bot. Reg.* 58.

Dendro'bium Ru'ckeri. "We presume this plant to be one of Mr. Cuming's discoveries in the Philippines, although no trace of it is to be found among his dried specimens. It belongs to the same set as *D. Pierardi*, among which it is one of those with yellow flowers. Although it may not be so handsome as some of these, yet it is a very fine species, and perfectly distinct, both in colour, habit, and the structure of the flowers. Its leaves are exactly lanceolate, very sharp-pointed, and a little disposed to curve backward at the end. The flowers, although of a rich yellow-nankin colour when expanded, are almost white externally; their lower sepals, which are really ovate in form, are rolled back at the edge, near the middle, so as to look as if contracted there. The petals and upper sepal are nearly of the same size and form, linearly-obovate, acute, and spreading. The labellum is deep orange, with a white edge and a pale pink outside; when spread flat it is roundish obovate, with three rounded lobes, of which the middle one is crisp, and has a hairy ridge running along the middle; the side lobes are hairy, too, near the base." It bloomed with Sigismond Rucker, Esq., jun., in February last. It should be treated like *D. Pierardi*, and the rest of that class. *Bot. Reg.* 60.

Duvau'a longifo'lia. "The Duvauas are a race of evergreen shrubs, smelling of turpentine, with small green flowers, a caustic juice, and considerable affinity to *Rhus*. We have now in our gardens the following species, viz. *D. dependens*, *ovata*, *latifolia*, this *longifolia*, and another or two undescribed and insufficiently examined. They all inhabit the southern temperate regions of South America, and are capable of living with us in the open air through ordinary winters, especially if placed in a north-western exposure. This species differs from *dependens* in its leaves not being at all serrated, and decidedly narrowed, not widened, to the base; and also in having very short corymbs of flowers. With the others it is not necessary to compare it. It is much hardier than any of the others, having stood against an exposed wall in the hard winter of 1837-8, when all the others were either killed down to the ground, or entirely destroyed. It grows freely in any good garden soil; flowers in June or July; and is increased by seeds, or by cuttings of the half-ripe wood, taken off about August, and treated in the ordinary way. The plant figured, was presented to the Horticultural Society some years ago, by Mr. H. Low, of Clapton, who raised it from seeds received from Buenos Ayres." *Bot. Reg.*, 59.

Eleutheri'ne ano'mala. "This singular little plant appeared in a flower-pot in the garden of the Horticultural Society, in April last, but its origin is unknown. Its similarity to the West Indian *Marica plicata*, renders it probable that it had been imported from that part of the world. From *Marica plicata*, it differs in its dwarfishness, in the leaves tapering very evidently to the base, while the uppermost have long channelled stalks, and are much longer than the flowers. The great peculiarity, however, consists in the flowers having six stamens, instead of three: a circumstance previously, we believe, unobserved in the Iridaceous order. Whether, however, this was an accidental circumstance in the plant figured, or is peculiar to the species, is uncertain. The increase in number of stamens, is of the same nature with their redundancy in *Vellozia* and *Gethyllis*." It seems a pretty little plant, and bears numerous white flowers. *Bot. Reg.* 57.

Luxembu'rgia cilio'sa. "M. Auguste de St. Hilaire characterized and published this beautiful genus, under the name of *Luxemburgia*, about the same time that it was taken up by Martius and Zuccarini under that of *Plectanthera*. The four species described by St. Hilaire are all inhabitants of Brazil; and all grow on that chain of mountains which separates the virgin forests from the discovered countries; 'and, what is remarkable,' continues St. Hilaire, 'is, that this chain, which forms the boundary line between two such distinct Floras, presents a vegetation equally distinct from both.' Our present species was first detected by Martius in the Diamond district, province of Minas Geraes; and, subsequently, in the year 1841, by Mr. Gardner, in moist, peaty soil, in open places, growing with species of *Andromeda*, on the Organ Mountains, at an elevation of 5,000 feet above the level of the sea. Truly distinct as this species is from any other, Steudel, in the last edition of his Nomenclator, has, I know not upon what authority, united it, together with *L. polyandra*, with *L. corymbosa*. No one could do so who has ever seen the two species growing. It is a truly handsome plant, both in its foliage, which is of a lively and glossy green, and in its fine corymb of flowers, of a pure yellow colour. It requires a moderate stove-heat; and flowers during the summer months, in the Royal Gardens of Kew, whither seeds had been sent by Mr. Gardner. *Bot. Mag.* 4048.

Mormo'des aroma'ticum. *M. Pardinum* is the only species to which this plant approaches closely. "In habit the two are similar, but *M. aromaticum* is the smaller, and has shorter leaves. The spike of *M. pardinum* is much longer, and bears three times as many flowers; the sepals and petals are narrower, and more taper-pointed; their difference in colour is obvious; the labellum of *M. pardinum* has the same form as the sepals, except that it has three sharp-pointed lobes, and a kind of stalk, which *M. aromaticum* wants. This species, although only introduced a few years since from Mexico, is now common; and, although of little beauty, is valued for the peculiar fragrance, which is like that of aromatic-vinegar." The flowers appear to have a kind of greenish dingy-white ground, spotted and stained with purplish-chocolate. *Bot. Reg.* 56.

Petali'dium barlerioi'des. This is the *Ruellia barlerioides* of some authors, and "inhabits the mountain regions of India, according to Dr. Roxburgh. It was found at Sheikpore and Monghyr, by Dr. Hamilton, and near Deyre by Dr. Wallich, to whom the Royal Botanic Gardens of Kew are indebted for a living plant. It requires a stove-heat, and with that treatment blooms readily in a pot, during the summer months, when its flowers render it ornamental. It belongs to the second tribe of Nees von Esenbeck's *Acanthaceæ,* which he calls *Ruellieæ,* and constitutes a genus, of which the present plant is the only species yet known to us." It forms an upright shrub, with woody jointed stems, the joints being short. The leaves are ovate, acute, and serrated. The peduncles are axillary, one or few flowered ; and the blossoms are large, white, streaked with reddish hairs inside. *Bot. Mag.* 4053.

NEW OR INTERESTING PLANTS RECENTLY IN FLOWER AT THE PRINCIPAL SUBURBAN NURSERIES.

ACHIME'NES PEDUNCULA'TA. This showy plant was lately flowering most superbly at the nursery of Mr. Mountjoy, Ealing. It is one of the best species of the very beautiful genus ; for, besides being so handsome, and bearing such a profusion of rich scarlet flowers at once, and in such good succession, it lasts in bloom so far into the autumn, and gives a great liveliness to the stove in the month of October. It is, likewise, exceedingly different from any of the rest.

CA'TTLEYA MARGINA'TA. A charming new species, flowered last month by Messrs. Loddiges, of Hackney. It is allied to *C. pumilum,* and has fine pinkish crimson flowers, which are margined with white. It will be readily believed by those who know the delicate yet rich hues of Cattleyas generally, that the circumstance of the blossoms having a white band round them, imparts a highly novel and delightful character.

CLERODE'NDRON ——— ? Mr. Glendinning, of Turnham-Green, has recently bloomed a *Clerodendron* which is supposed to be new, and is described as being extremely fine. Its affinities are with *C. squamatum* and *C. Kœmpferi ;* but it is of a much deeper scarlet in the flowers than the former, and seems to differ from the latter.

MARTY'NIA FRA'GRANS. It is much to be regretted that this very noble annual is not more cultivated, and spread about through the country. The large crimsony-purple blossoms are exceedingly ornamental, and their strong violet-like odour perfumes the air of the greenhouse for many yards around. It is a plant of luxuriant growth, yet by no means straggling, and peculiarly fitted for placing in a show greenhouse or conservatory. We saw it blooming about two months ago, at Messrs. Rollisson's, Tooting.

NEMO'PHILA DISCOIDA'LIS. We first observed the plant that now bears this name in the nursery of Messrs. Rollisson, Tooting, two or three years back. It was considered an accidental sport from seed of *N. atomaria.* The colour of the flower is a dark velvety-sanguine, with a pale border. It is a diseased-looking thing ; and, wherever we have noticed it, has presented so poor an aspect, as decidedly not to be worth growing, except as a mere curiosity.

ODONTOGLO'SSUM GRA'NDE. For those who can only grow a few Orchidaceæ, and who do not wish to expend much upon them for fuel, this is one of the very best species that can be selected. Specimens in the collection of Messrs. Loddiges have just borne two, three, or more spikes of flowers each ; and these blossoms are among the most magnificent things with which we are acquainted. The plant can be grown well—indeed better than in a hot stove—in a greenhouse that is kept a little close, the atmosphere being slightly moistened in summer. It will not bear too much moisture ; and will thrive either in a pot filled with rough heath-mould and broken stone or potsherds, or upon a large log of wood, suspended, and partly covered with moss to retain water about the roots in summer. A temperature that does not fall below 40°, and is not a great deal above it on the average, will suit it very well through the winter months. By putting a few smaller plants together in one pot, or upon one block of wood, a large and handsome specimen may easily be obtained.

PHLO'X, PRINCESS MARIANNE. At the nursery of Messrs. Rollisson, Tooting, this pretty *Phlox* blossomed a few months since. It resembles the variety named after M. Van Houtte, of Ghent, and has deep crimson or blood-coloured flowers, with a white margin. Along with its ally, it will no doubt be much sought after in the following season.

POTENTI'LLA, *new vars.* There are two or three pleasing new Potentillas at the Epsom nursery, raised from seed by Messrs. Young, or by other growers. One is a large flowered white one, of good quality ; and another is like *P. Hopwoodiana,* only with less of colour, and broader flowers. There is obviously great room for yet further improving the hybrids from this useful genus ; and a group of any of the better kinds would certainly have a fine effect in some of the larger beds of the flower-garden, or in those plots where taller plants than the ordinary half-hardy objects used for flower-beds are required.

PORTULA'CA SPLE'NDENS. Equally as splendid as the glowing *P. Thellusonii,* and equally adapted, also, for the same variety of treatment ; flowering well in a stove, a greenhouse, or a sunny border, and bearing its rich blossoms for many months. We saw it at Mr. Low's, Clapton, in September, when it was in high perfection. It is much like P. Thellusonii, but has dark crimson flowers.

RHE'XIA VIRGI'NICA. Seldom is this beautiful old plant met with in those masses which alone render it so peculiarly gay. At Messrs. Rollisson's, Tooting, we noticed it, about the beginning of September, forming a pretty large bed ; and its deep pink or pale crimson flowers were certainly extremely attractive. It should be grown in pure heath-mould ; for only by being thus treated, will it have that healthy appearance which is one of the greatest merits in all cultivation. It would make a capital bed in the flower-garden ; or a good patch in the borders, among American shrubs that are planted in heath soil.

SAGITTA'RIA SAGITTÆFO'LIA PLE'NA. This is a particularly interesting aquatic, with leaves somewhat in the form of old arrow-heads. But its foliage, though uncommon, and therefore worthy of notice, is far from being its chief merit; for it has numerous bunches of double cream-coloured or pale pinkish flowers, which are borne during a period of several weeks. We observed it flowering in a basin at Messrs. Rollisson's, Tooting, in the beginning of last September. From the scarcity of hardy aquatics, and the complete hardihood as well as attractiveness of this, it ought to be in every small basin, pool, or lake, where such plants are allowed a place.

SIPA'NEA CA'RNEA. Messrs. Rollisson, of Tooting, have bloomed a plant bearing this title, in one of their stoves. It seems to be a shrub, with good foliage, and corymbs of delicate whitish blossoms, which are very elegant. They are not much unlike an *Asclepias* in general appearance. The plant appears likely to be an interesting one, and of service to the cultivator.

SOBRA'LIA MACRA'NTHA. This princely flower was expanded with Messrs. Loddiges in the month of September ; and the glowing richness of its tints seemed even more striking than on former occasions. It is quite a queen among Orchidaceæ, and associates worthily with *Cattleya labiata,* which, indeed, it far surpasses in gorgeousness. It should be planted in a very fibrous heath-soil, well drained, with a mixture of potsherds; because, as it requires a rather large pot, and will not bear much moisture at some periods, it is liable to be injured if the soil be not very open. It would doubtless thrive vigorously in leaf-mould ; being one of those terrestrial kinds of Orchidaceæ that seem as if they would like something richer than common heath-soil.

STA'TICE MACROPHY'LLA. In a stove at Mr. Jackson's, nurseryman, Kingston, this stately plant is just in a flowering condition. It has a tuft of ample foliage on the top of its woody stems, which are from nine inches high and upwards, according to the age of the specimen. The leaves are very much larger than those of *S. arborea,* more numerous, somewhat narrower, and a little wavy. The panicle of flowers is a good deal in the way of that of *S. arborea,* and so are the individual blossoms. It seems to be a freer-growing plant than that species, and to need less delicacy of attention in its culture. From its spacious leaves, it has at all times a fine appearance.

OPERATIONS FOR DECEMBER.

ALTHOUGH there is a proverbial uncertainty about the weather at all seasons, in few months can we calculate less upon its character than in December. Placed as it is between November and January, it seems to borrow, at times, the characteristics of each ; and to be sometimes dull and misty like the former, and, in other parts, clear and frosty as the latter. Up to Christmas, indeed, we have not often had very sharp frosts. But still, they do occasionally happen ; and there are likewise days experienced in this month when the air is as mild, and the sun as brilliant, as in spring.

To adapt the treatment of his charge to every variety of weather, deriving all the good from the favourable portion of it, and avoiding all the injury of the unfavourable part, is the highest evidence of skill in a cultivator. In the varied changes during the present month, therefore, it will be necessary for him to be specially on the alert. Whenever the weather is at all foggy, rainy, or dull, or the air is in any way rendered very moist, and there is neither a drying wind nor a bright sun, no kind of plant structure should be at all opened. To admit a damp air to plants at this season, would be like introducing a pestilential one to an apartment tenanted by human beings. But when the reverse of all this is the case, and the air is so dry, or the wind so brisk, (not strong,) or the sun so powerful, as to make the opening of the sashes a drying instead of a damping process, or merely to render it of no effect as regards moisture, the lights of greenhouses and frames should be thrown freely open, provided there is no frost. Stoves, too, may be similarly ventilated, though, perhaps, not to the same extent; for it is of the highest consequence to keep down the temperature as low as will be safe in all plant-houses at this time.

When, again, a few degrees of frost occur, the culturist should not immediately resort to fires, if they can be done without. A well-glazed house will always be several degrees warmer than the external air; and should the temperature of a greenhouse or cool pit be reduced nearly or quite to freezing point, and even two or three degrees below it, scarcely any of the plants will take the least harm if they are in a proper state of dryness and maturity. Where, indeed, plants do happen to get frozen, the house, pit, or frame should be covered over immediately with thick canvass or garden mats, before the sun shines upon it, and be kept thus till the plants are gradually thawed, sprinkling them with cold water, when they are very bad, to facilitate this reaction.

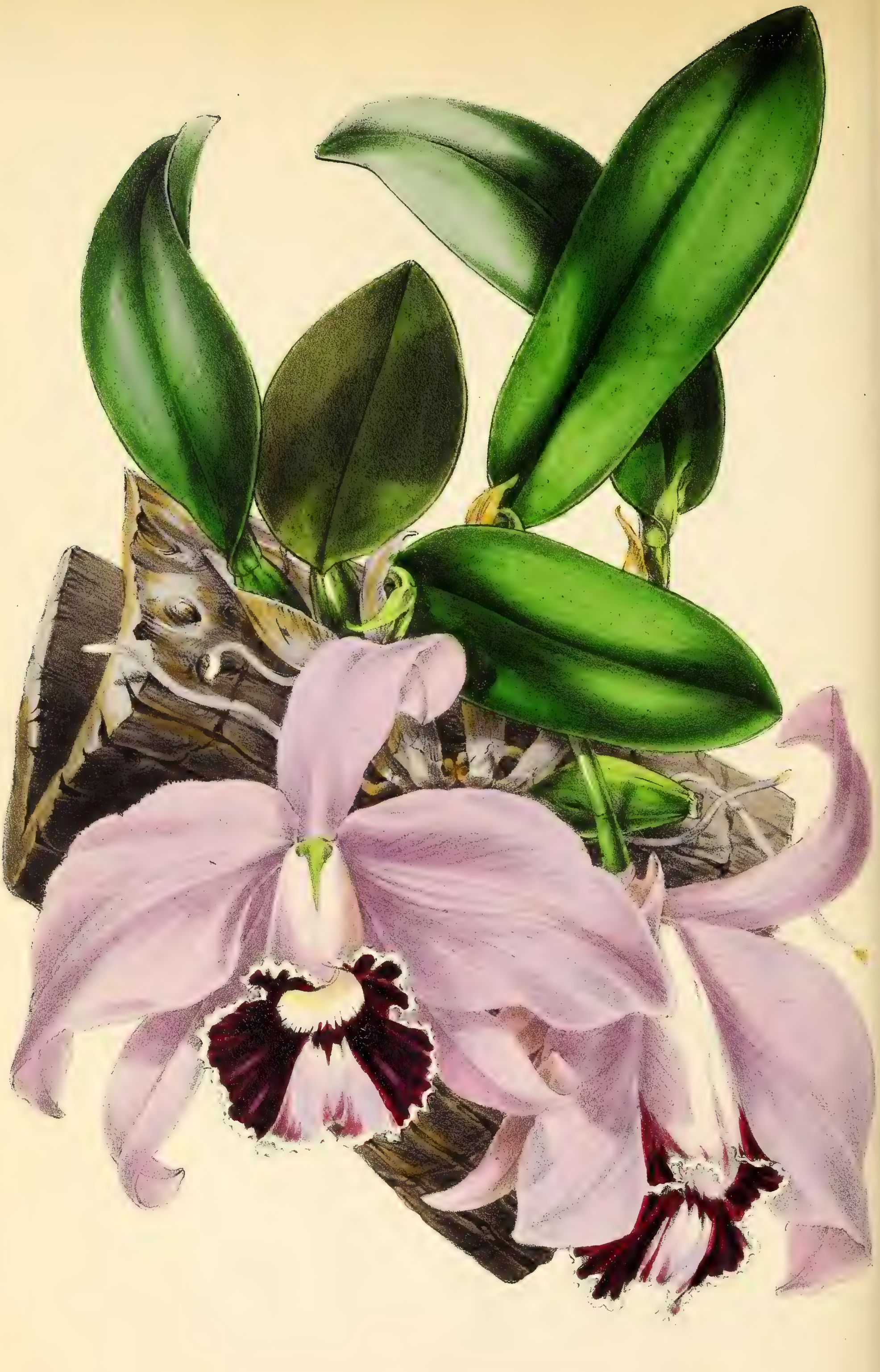
If, by any unlooked for frost, which may come so suddenly as to catch some of the tender shrubs that are planted out of doors uncovered, their shoots should get more or less severely nipped, the safer plan is to throw on the covering early in the morning, ere the sun has risen, and by thus preventing its rays from acting on them directly, they will most likely be saved from damage.

In managing all kinds of plants in houses during this month, one simple and common rule will be almost of itself a sufficient guide; and that is, to give no more water than is really essential; such necessity being determined by each plant's appearance, or rather, by the state of the soil in the pots. This should never get absolutely dusty; nor should the leaves of the plant ever flag. Short of these two circumstances, however, any proximity to them will be desirable. Pans for containing evaporating water, whether in greenhouses or stoves, and all open cisterns, should be emptied and disused. Dryness is now the main thing to be sought; and the more naturally this is attained—that is, by avoiding the *causes* of moisture, instead of abstracting it through artificial means after it has been created—the better will it be for the plants, besides being more economical.

With the exception of things that are wished to be forced, and those Orchidaceæ that have not yet become sufficiently accustomed to our climate to conform their habits to its peculiarities, all plants should now be literally at rest. And this phrase is not to be regarded as comparative. In as far as any living thing can absolutely repose, plants ought to do so in winter.

In the forcing-house, the conditions will, of course, be necessarily reversed. There the laws of growth will have to be followed. Gentle heat at first, gradually afterwards increased, is one part of the procedure of nature; and if this be bottom heat for forcing, it will be more genial. Atmospheric moisture, exhaled from the soil, is another condition; and this will be best supplied by watering the material used for bottom heat. As much light as possible, and a due amount of water to the roots, are the other two necessaries. To supply the first in perfection, a low-roofed structure is almost indispensable; and, with reference to the water, we may remark, that it should be always a little tepid when applied.

To pass to the open ground, the practice of digging beds and borders at this time is a good one, as it gives them an air of neatness and freshness all the winter, and also tends to mellow the soil. Among evergreen shrubs, such as American plants, &c., it may be impolitic to dig over the soil annually; but in this, as in all cases, there are two views to be taken. Where the soil is so very light as not to become much compressed by the action of the atmosphere and the weather, and where it is never trodden, it may be better not to stir it at all, as the roots would then be secure from injury. But, under opposite conditions, the opening of it to the air by forking, and the lightening of it by the same means, so as to give the roots a freer passage, and the water a more decided circulation, are of first importance. It must be settled, then, by the existence or absence of such conditions in a considerable degree, whether a border should or should not be forked over.



S. Holden. del. & Lith.

Cattleya marginata.

CÁTTLEYA MARGINÀTA.

(White-bordered flowered Cattleya.)

Class.
GYNANDRIA.

Order.
MONANDRIA.

Natural Order.
ORCHÌDACEÆ.

Generic Character.—*Sepals* membranaceous, or fleshy, spreading, equal. *Petals* often larger. *Labellum* cucullate, including the column, three-lobed or undivided. *Column* club shaped, elongated, semicylindrical, marginate, jointed with the labellum. *Anthers* fleshy, four-celled. Pollen-masses four, with the caudicula turned back.

Specific Character.—*Plant* an epiphyte. *Pseudo-bulb* from an inch and a half to two inches long. *Leaves* elliptical, one on each pseudo-bulb. *Flowers* apparently solitary, on long drooping peduncles. *Petals* much larger than the sepals. *Lip* large, partially three-lobed, with the expansive part chiefly of a crimsony sanguine hue, and having a white undulated border.

The gorgeous *Cattleya labiata*, which may be regarded almost as the queen of Orchidaceæ, is known to most admirers of the tribe, and at once arrests every observer when it is in blossom. The pretensions of the species now figured are more modest, but not less genuine. It is a perfect gem of its class, and becomes additionally interesting from the circumstance of its adaptation to the purposes of the cultivator in a picturesque point of view; as it may be grown on a log of wood, and suspended from the roof of the hothouse.

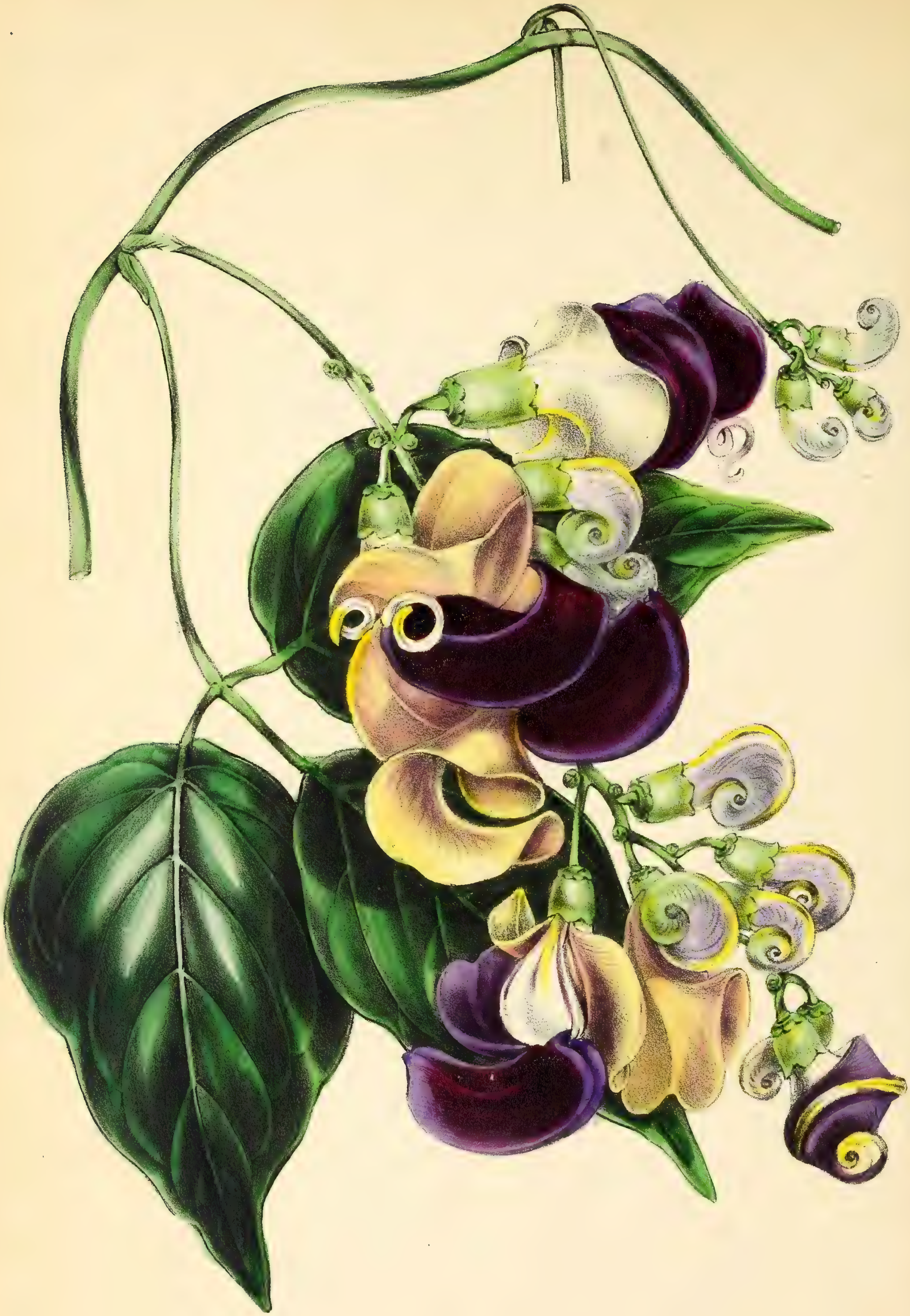
It is one of the many treasures in the collection of Messrs. Loddiges, of Hackney, and was imported by these gentlemen from Brazil. It blossomed in their Orchidaceous-house during the month of October last; and our artist then took the drawing here inserted.

In its dwarfness, it comes near *C. pumila*, another lovely species, which is too little cultivated. The flowers are very large, compared with the size of the plant, and are borne singly on the top of the fresh pseudo-bulbs. They assume a drooping character, which greatly improves their effect when the plant is suspended. The sepals and petals are of that delicate rosy-crimson which is found in several species, and the handsome lip is much like that of *C. labiata;* but the last organ has a beautiful white border, which is the peculiar characteristic of the plant, and certainly renders it very attractive.

Altogether, this is one of the most pleasing of Orchidaceæ, and well exhibits their remarkable peculiarities. Nothing could be more fascinating in a drawing-room, than a few plants such as this, in full flower, hung from the ceiling; the block of wood to which they are fastened being half concealed by moss. Not requiring a very high temperature, it is also singularly fitted for such an object.

To grow it nicely, it should be fastened to an old log of wood, and kept in a cool house during the winter. The cooler part of the Orchidaceous-house, where it will not get too much moisture, will likewise suit it best in summer. It may be grown in a pot, if desired; but this system is not so completely in accordance with its habits.

The genus, now so rich in fine plants, commemorates W. Cattley, Esq., of Barnet, one of the earliest cultivators of Orchidaceæ.



S.Holden, Lith.

Phaseolus caracalla

PHASEÒLUS CARACÁLLA.

(The Snail Flower.)

Class.
DIADELPHIA.

Order.
DECANDRIA.

Natural Order.
LEGUMINÒSÆ.

Generic Character.—*Calyx* campanulate, bilabiate; upper lip two-toothed, lower one three-parted. *Corolla* papilionaceous; keel, style, and stamens spirally twisted together; rarely incurved. *Stamens* diadelphous. *Legume* compressed or cylindrical; two-valved, many-seeded; the seeds separated by a kind of cellular substance, and furnished with an oval oblong hilum,—*Don's Gard. and Botany.*

Specific Character.—*Plant* a twining perennial. *Roots* fasciculately tuberous. *Leaflets* ovate-rhomboid, acuminate. *Racemes* very long. *Calyx* with nearly equal teeth. *Standard* and *keel* spirally twisted. *Legumes* straight, torulose, pendulous.

None but a botanist would, at first sight, detect any resemblance between the flowers of this extraordinary plant and those of the common Kidney-Bean. And yet they both belong to the same genus.

Many curious instances exist in the vegetable kingdom, in which observers have found some real or fancied similarity to objects in the animal world: and the one before us is by no means the least noticeable. In the spiral form of the folded flowers, ere they are expanded, there is assuredly something not unlike the anatomy of the snail. And though the thing with which the flower is thus compared by no means augments its interest, from association, nothing but the figure of the snail, and not its repulsive character, is thought of while we admire this singular and really delightful production.

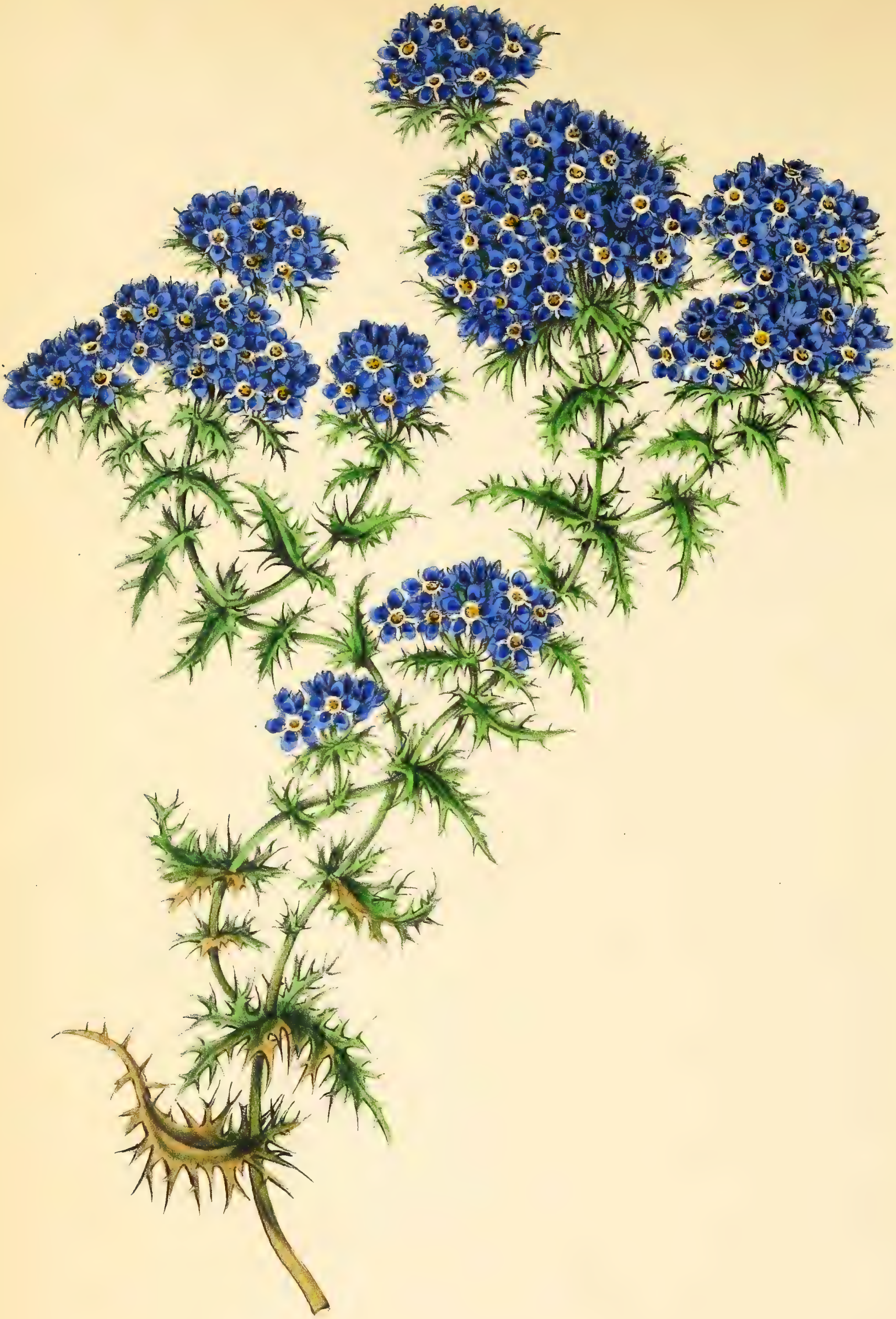
Having been one of the first exotics cultivated in this country, it has lost much of its attraction in modern times. Indeed, it is rarely seen in collections of stove plants: we learn, however, that it has recently acquired the name of *Glycine* or *Wistaria Harrisonii*, and in that way is being put forth as a novelty.

For the drawing from which our figure has been copied, we are much indebted to Lady Hay Williams, by whom a beautifully prepared painting was sent to us. We understand it was taken from a plant which bloomed at Sir John Williams's seat in Wales; and which we believe is at Boddlewyddn, Flintshire.

The species is a deciduous stove-twiner, native of the East Indies, bearing long racemes of large flowers, which are of a purple and yellowish hue. They have a very graceful appearance, depending from the slender branches. The plant can be cultivated with difficulty in a slightly enriched loamy soil; but it is said to be liable to the attacks of the red spider, from which it may be kept free by syringing, and by placing it in a moist atmosphere. It is a good plant for training up the rafters of a house, where its fine racemes of bloom will be shown advantageously. We have here published the figure chiefly because it is a rare and highly ornamental plant, with very fragrant flowers, and of difficult management.

In many parts of the south of Europe and the north of Africa, it is grown for culinary purposes; the pods, we presume, being the parts used.

The Portuguese, who introduced the species from South America, named it Caracalla, in consequence of its hooded flower. It is one of that rare class of plants which combine the ornamental with the curious.



S. Holden, del. & Lith.

Triptilion spinosum

TRIPTÍLION SPINÒSUM.

(Spiny Triptilion.)

Class.
SYNGENESIA.

Order.
ÆQUALIS.

Natural Order.
COMPOSITÆ.

Generic Character.—*Floral leaves* five; leaflets oblong, drawn together in a tube, often having three to five narrow bracts at the base, unequally subimbricated, persistent. *Corolla* four or five-flowered. *Florets* all hermaphrodite; fertile ones two-lipped; exterior lip ovately strap-shaped, tridentate; interior one entire, awl-shaped. *Anthers* with a tube, which has ten scales at the base. *Achenia* trigonal, small. *Pappus* chaffy, deciduous; scales with a long, ciliated summit. *Receptacle* minute, villose.

Specific Character.—*Plant* an herbaceous perennial. *Leaves* pinnately-lobed; lobes terminating in a spiny mucrone. *Floral leaves* blue.

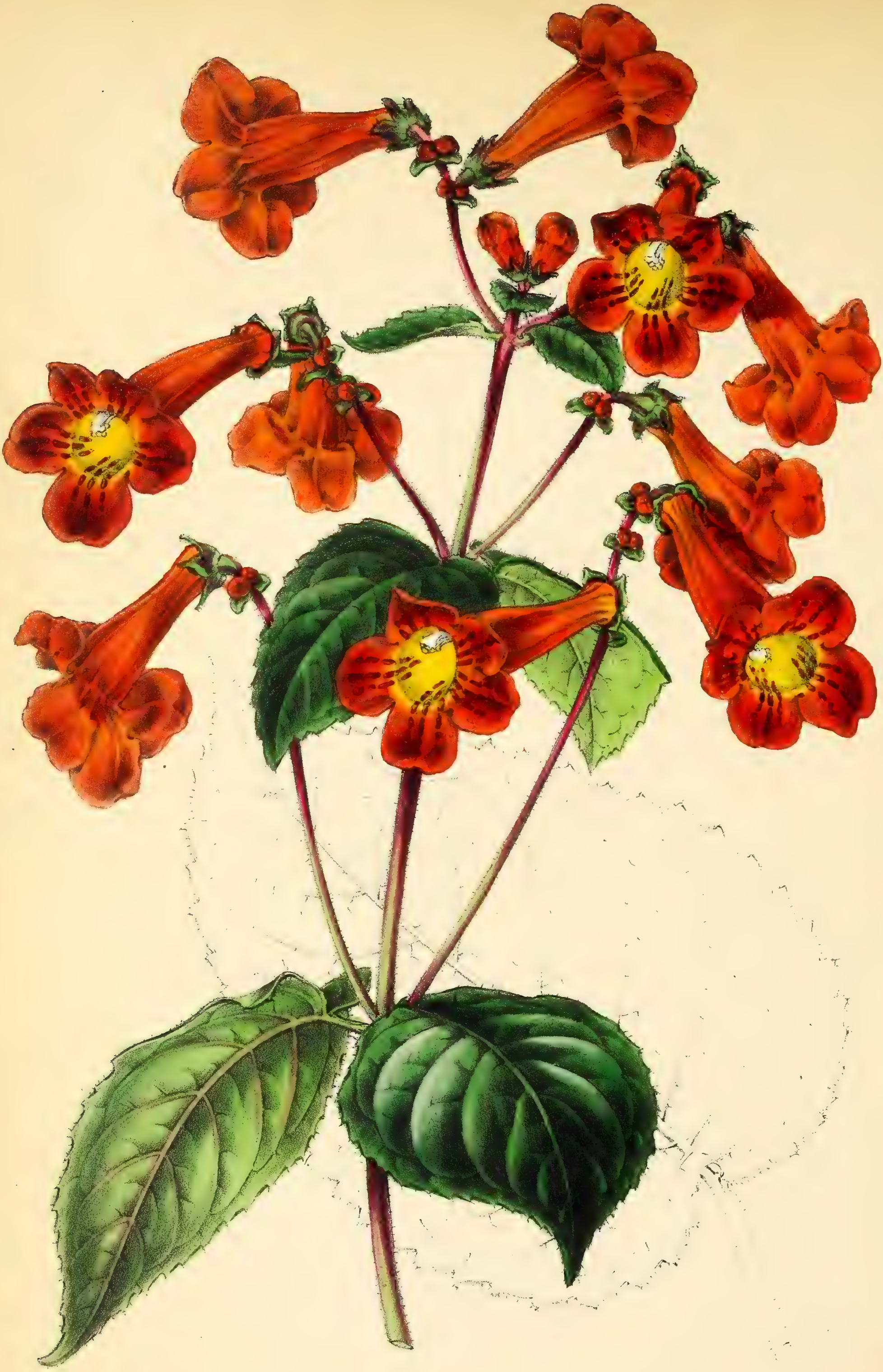
There is a striking beauty about the vivid blue tint of the blossoms of *Triptilion spinosum*, which must always render it an object on which it is delightful to gaze; and the extreme neatness of these flowers, with their copious production in dense heads, is another characteristic which adds to its effect.

Writing of it in the Botanical Register, Dr. Lindley remarks that "it is a native of Chile, where it appears to be exceedingly common, and is called *Semperviva*, on account of the permanence of its deep azure flowers. It has long been known to botanists conversant with the Chilian Flora as a most desirable species to introduce, and repeated attempts have been made to secure it, but in vain, until seeds came into the hands of Mr. Frost, gardener to the Countess of Grenville, at Dropmore." Mr. Frost has been very successful in rearing it; but the specimens exhibited by him at the Chiswick Gardens have not been free from that brownness in the lower leaves, and that partially unhealthy aspect, which are too common to the species.

We owe our drawing to Mr. Glendinning, of the Turnham Green Nursery, in whose collection it flowered well last autumn, and where our artist obtained specimens. Mr. Glendinning writes us respecting it as follows:—"Its scarcity in collections is attributable to three causes; viz., the sparing way in which it has hitherto been increased, the want of the true desideratum of culture, and the great difficulty attending its preservation during winter. I perpetuate it by division of the roots. This means of increasing it, however, is a very sparing one. It should be divided early in the autumn, that the plants may be established before the damp days arrive. It must not from this be inferred that the plant is tender. On the contrary, it will resist considerable intensity of frost without injury. It will produce seeds, although not freely. The plant from whence your drawing was made has afforded me a little seed ; and I have now plants obtained by both modes of increase. The seeds should be sown immediately when gathered, in light sandy soil, and placed in a warm house. When sufficiently advanced, the plants should be potted singly in small sixties, and kept in a dry part of the greenhouse during winter."

The great point in growing the plant is evidently to preserve it from superfluous dampness. To aid in effecting this, the heath-mould in which it is potted should be particularly fibrous and open, and have a little turfy loam and leaf-mould mixed with it, besides a small quantity of broken sandstone.

The three divisions of the pappus of the flower have originated the generic name, which is from *treis*, three, and *ptilon*, a feather.



S. Holden del. & Lith

Achimenes pedunculata

ACHIMENES PEDUNCULÀTA.

(Long peduncled-flowered Achimenes.)

Class.
DIDYNAMIA.

Order.
ANGIOSPERMIA.

Natural Order.
GESNERÀCEÆ.

Generic Character.—See p. 145, of the present volume.

Specific Character.—*Plant* an herbaceous perennial. *Stem* erect, simple, pubescent. *Leaves* slightly unequal, obliquely cordate-ovate, serrate, sparingly covered with hairs on the upper side, pubescent beneath. *Peduncles* mostly two-flowered, longer than the leaves, and with the calyx pubescent. *Corolla* nodding, funnel-shaped, with a long tube; limb spreading.

The genus *Achimenes* is a very valuable one to the cultivator, because the plants in it are easily grown, remain dormant in winter, produce a long succession of showy flowers, and are rarely seen in an unhealthy state, even though they may not be suitably treated. The soft and exquisite light purple of the blossoms in *A. longiflora,* and the glowing crimsony scarlet of *A. coccinea,* have here a worthy companion in the deep vermilion and orange of *A. pedunculata;* which is likewise a species so peculiar in habit, that it presents a fine change from the others.

It was found by M. Hartweg, the collector for the Horticultural Society, in the shady woods of Santa Maria, Guatemala, and sent to the Society's garden at the same time as *A. longiflora* and *A. rosea.* One of its chief recommendations is, that it continues to flower late in the season, our figure having been prepared from excellent blooming specimens in the nursery of Mr. Mountjoy, Ealing, in the month of October last.

Being of a strong erect habitude, it grows to the height of eighteen inches or two feet, and bears its handsome blossoms towards the top of the stem, on long axillary peduncles, which have usually two flowers on each. Their colour is a dark vermilion, with a light orange-coloured throat, and dark stripes in it extending nearly across the segments of the limb. Curious little bulb-like tubers are formed on the upper part of the peduncles, along with minute leaves; both of which are shown in the plate.

To have this *Achimenes* in high perfection, it should be grown rapidly when it begins to start. A warm moist atmosphere will best accomplish that object; and if these conditions be supplied through the medium of bottom-heat, they will be all the more congenial. A moderately rich loamy soil is requisite. Throughout the winter, the plant will remain in a state of rest; but it does not lose its stems so early as some of its allies, and consequently requires to be watered with caution in the autumn.

We presume that, like the rest of the species, it produces tubers in abundance from its roots, and that by these it may be readily propagated.

From the rich colours of its flowers, it offers a good occasion to the hybridist for blending with such species as *A. grandiflora* or *rosea.* Indeed, with the former, its own blossoms would be improved in size; while *A. rosea* would be altogether ameliorated by the interfusion of its hues.

DEATH OF J. C. LOUDON, Esq.

It is our most painful duty this month to record the death of one who was well known to the educated world in general, but to the Gardening world in particular; and who devoted a life of indefatigable industry to the advancement of Horticultural pursuits.

The death of Mr. Loudon, which took place at his house in Bayswater, on Thursday the 14th inst., will be long and severely felt by the horticultural world; and whether we consider his standard works on Agriculture, Gardening, Botany, &c., or his periodical publications, we must pronounce him the most extensive author and compiler of his day. He has left behind him no British author who has collected and published a greater mass of useful information.

Through a life of most unwearied and persevering exertion, he devoted his time and talents to the amelioration of the condition of the humbler classes; for the good effects of his Encyclopædia of Cottage Architecture have not only been felt in Britain, but also in America and Australia. He revived that spirit for horticultural pursuits, which had slumbered for years; and created a new era in gardening by his "Gardener's Magazine." His last great work, the "Arboretum Britannicum," is alone sufficient to assure his fame. He may be said, in the most literal sense of the phrase, to have "trimmed the midnight lamp;" for he laboured nearly day and night for the advancement of science, and wasted his constitution in the pursuit of his favourite studies:—yet fortune frowned upon him!

As a man of independent spirit and enlarged views, he was rarely surpassed. As a man of industry, he had few equals. As a friend, his attachment was warm and sincere; while in the domestic circle he was most amiable, polite, and agreeable. He retained to the very last the full use of those faculties which he had so long exercised for the benefit of mankind.

In the noble art of landscape gardening, his labours are known throughout a considerable part of the country. He was frequently consulted, and has generally been happily successful in carrying out his designs. Like most professors of the same art, he had favourite fancies, which he sometimes advocated, perhaps, too warmly; but the majority of his views were sound and consistent; and he had acquired immense experience in the details of the pursuit.

Mr. Loudon also effected much towards introducing a correct taste in landscape gardening amongst Gardeners, by publishing, in a cheap form, the works on the subject by H. Repton, Esq. This was the commencement of a series of volumes similar in character, which was intended to constitute a small library on the art. That such kinds of works are greatly needed, there can be no question ; and we trust the undertaking will be resumed by some competent individual.

As well in this, as in most cases, Mr. Loudon evinced a peculiar shrewdness in anticipating the literary wants of the community. And if some of his works did not meet with adequate encouragement, it was mainly owing to his having projected them on too large a scale, or prepared them in too expensive a manner.

One of the methods by which he collected together the immense mass of information with which his mind and his works were stored, deserves special mention. It was by travelling through different parts of various countries, and personally examining whatever objects of interest could be found on his tours. By this means, he had an opportunity of investigating a vast number of subjects, and comparing the merits of various systems of operation, with little liability to error. It likewise gave capaciousness and shrewdness to his general conceptions.

During the earlier part of his literary career, his strictures on gardens, &c., were often severe, and caused some offence. This will almost necessarily be the case with a man of integrity, who sets out in the endeavour to correct great existing evils. Towards the later part of his life, however, the natural suavity of his disposition was more displayed in his writings; and, while characterized by independence, they are mostly full of kindly feeling.

With Gardeners, the influence of that name, which was a spell-word in the advancement of their art, will never be lost ; for, so long as the delightful occupations of Horticulture are valued, so long will the name of Loudon be known and honoured.

Our country owed him much ; and, although "no sculptor has chiselled his bust—though no poet has sung his praise—yet he did not live without much honour—he has not died without much regret !"

Chatsworth,
Dec. 19, 1843.

OPERATIONS FOR JANUARY.

Security from frost is the great thing commonly wanted in plant-houses at this period of the year; and that end is best attained by avoiding everything which would lower the temperature of the air, and facilitate the abstraction of the plants' natural heat. Unnecessary moisture will be the first evil to guard against; as, where it exists, either an injurious temperature will have to be maintained, or the plants *must* suffer from cold. Every cultivator has (or ought to have) it in his power to regulate the dryness of his houses to any extent, by using very little water in them. Almost all plants being in a state of repose, actually require to be kept nearly dry: though, as positive repose is hardly known in the vegetable kingdom, water must not be entirely withheld, except from tuberous-rooted plants or bulbs, that have lost all their herbage, and some of those deciduous shrubs which are not exposed to any atmospheric influence or excitement. Thus, Fuchsias, if put in a rather darkened place, where there is only temperature enough to expel frost, and where moisture cannot entirely escape from the soil, will not need watering for two months; and plants of allied habits may be treated similarly.

The mild weather of the last month has given a fine opportunity for keeping plants hardy, by opening the sashes of the houses or frames. It should, therefore, be a prime point in the management to keep them so. Frames, in which water is very scantily supplied, and which are not furnished with a heating apparatus, may be covered up thickly for a week or a fortnight together during severe frost. And where fire-heat can be put on, it is always prudent to apply an outer covering in addition, as well for safety as for economy, and the health of the plants.

To make the show-house or conservatory gay during the earlier months of the year, fresh bulbs, shrubs, &c., should be put into the forcing-pit at least every fortnight, or, when they can be spared, every ten days. It is a worthy achievement in floriculture to have the show-house well stocked with beautiful and fragrant flowers from Christmas to May, because this is the time when such things are most delightful on account of their comparative scarcity. It may be readily accomplished where a proper forcing-pit is possessed, and a sufficient command of heating materials. The great design of the flower-forcer should be to get flowers that are delicately beautiful and last a long time, and also as many as possible that have an agreeable odour.

Out of doors, the operations of digging and manuring should be proceeded with. From the supposition that flowering-plants are rendered rank and infertile by manure, it is too often discarded altogether from the flower-garden. But a little manure is of great service to summer flowering-plants generally ; as it both makes them less liable to be harmed by drought, and also gives them a richness they would otherwise want. It should, however, be well decayed, and almost in a state of pulverization.

For any fine and rather tender herbaceous plants, that lose their leaves in winter, a mulching of manure will answer the double purpose of protection and enrichment. It should be put on immediately. Fuchsias in the open ground would be quite sufficiently protected by such an application.

As to the advantage or disadvantage of digging over shrubbery borders each winter, the existence of diversified opinions renders some consideration requisite. In most instances, where two extremes of practice prevail, the intermediate course may be regarded as the right one. And this seems to be a correct rule with respect to the subject under notice ; for digging, like other things, must be regulated chiefly by circumstances. Where the borders are so much shaded and confined, or the soil so clayey that herbaceous flowering plants will not flourish, it is certainly much better to turf them over, and not dig them at all. But where they are open to the sun, and in a situation suitable for displaying flowers, and the soil is appropriate, they should unquestionably have their surface dug over with a spade or a fork, to the depth of at least four inches. This is necessary for the flowers ; it is necessary, on account of the treading which will occur on the border, and it will mostly benefit the shrubs by admitting air to their roots, and rendering the earth porous and light, besides giving an opportunity for curtailing the roots of the commoner kinds.

The case is materially different when the border is filled entirely with fine-rooted shrubs, such as American plants, in a soil principally composed of heath-mould. It would be very injudicious to dig this. But then, it should be carefully preserved from being trodden upon ; for it is of prime importance to keep it open, and capable of admitting atmospheric influence.

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